

SUPPLEMENT
TO AN
ACCOUNT OF A PLAN,
FOR THE BETTER SUPPLYING
THE CITY OF EDINBURGH
WITH
C O A L;
COMPRISING
AN EXAMINATION OF AN ANONYMOUS PAMPHLET
LATELY PUBLISHED, UNDER THE SIGNATURE OF
AN OLD COALMASTER.

MAGNA VERITAS EST, ET PRÆVALEBIT.

By **HENRY STEUART, LL. D.**
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TO THE RIGHT HONOURABLE
THE LORD PROVOST,

AND THE
MAGISTRATES

OF THE
CITY OF EDINBURGH,

THE FOLLOWING PAGES,

WRITTEN IN DEFENCE OF AN UNDERTAKING,
OF ALL OTHERS THE MOST IMPORTANT AND INTERESTING

TO THE
METROPOLIS OF SCOTLAND,

AND TO
ITS PORT OF LEITH;

ARE DEDICATED,

BY THEIR MOST OBEDIENT,

AND HUMBLE SERVANT,

THE AUTHOR.

ERRATA.

Page 45. line 11. *For easy, read obvious.*

— 46. — 4. *For the latest calculation, read his own calculation.*

— 52. — 4. *After the word nature, insert but.*

— 99. — 11. *For less than 18., read at less than 18.*

— 130. — 11. *In note, for waggons, read waggoners.*

— 139. — 14. *For Observation, read Observations.*

— 143. — 15. *For given the Observer, read given by the Observer.*

— 153. — 5. *For a easy task, read an easy task.*

— 154. — 20. *After the word attainment, supply the marks ”; and, in line 21., obliterate the marks “ and ”.*

— — — 22. *For allow, read atone.*

THE PREFACE.

FROM the temper and tendency of the Pamphlet, some months since published under the signature of AN OLD COAL-MASTER, my friends, I trust, will give me credit for the assertion, when I say, that, in delaying to reply to it so long, I have neither been overwhelmed with terror, nor yet withheld by indolence; although, I own, I was desirous, that, previously to my answer, the RE-SURVEY of the COAL-COUNTRY by Messrs Busbys, on which my former reasonings depended, should be carried into effect, and their Report, in consequence, laid before the public.

WHATEVER I formerly advanced concerning the most feasible line for the intended Navigation, it gives me some plea-

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sure

sure to think, has been clearly verified, on the first Professional Evidence in the kingdom: And there is reason to believe, that not only Mr Rennie himself, and the Subscribers to the CANAL, but the candid and impartial among the community at large, are now fully satisfied. Should there be any, to whom the subject might seem interesting, who have been bewildered by the misrepresentations, or confounded by the sophistry, of an Anonymous Pamphleteer, they will find both their doubts and their difficulties removed, by a candid perusal of the present pages.

HAVING openly put my name, both now and heretofore, to what I have written in this controversy, I consider myself as answerable for it, at all times, whether to individuals, or to the public: But I am careless of the displeasure that either

Pamphlet

Pamphlet may occasion, or the hostility it may excite, in bankrupt Merchants, and neglected Surveyors; or yet in those Coal-masters, or Iron-masters of the East or West, who are unluckily offended when they hear the truth.

NOTWITHSTANDING the technical nature of particular parts of the present publication, I should willingly hope, that, as it deeply concerns, so it would proportionally interest, the great body of the inhabitants of this Metropolis. The city of Edinburgh as a corporation, and the Merchants of Leith as individuals, would, in the first instance, unspeakably benefit by the important undertaking of which it treats; and, I trust, it will be received with candour, if not with partiality, by most others, whether in the South or North, who look forward with satisfaction to

public improvements, and the rapid increase of public prosperity.

To gentlemen, also, possessing property in Coal, and not greatly conversant with the business, some information which is here conveyed, and not probably to be found in Books, may perhaps prove acceptable. However this may be, it has the recommendation of being borrowed from real Practice; professional intricacy has, in general, been avoided; and the barbarous jargon, in which such topics commonly are enveloped, has been exchanged, where it was possible, for corresponding idioms, and for more intelligible, and usual modes of speech.

EDINBURGH, }
25th Nov. 1800. }

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SUPPLEMENT

TO AN

ACCOUNT OF A PLAN

FOR THE

BETTER SUPPLYING THE CITY OF EDINBURGH

WITH COAL, &c.

WHEN I lately undertook to give an account of the nature and extent of a great design, that of uniting, by a new CANAL, the German with the Atlantic Ocean, I conceived that it was a national object of some magnitude, and intitled to a fair, a candid, and a sober examination. Convinced that it is by fair enquiry alone that we can ever arrive at the discovery of truth, or the detection of error, I rather courted, than shunned discus-

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sion; and I was pleased to see the "Observations of an Old Coalmaster" announced as an answer to my pamphlet.

OF the matter of this production whatever may be thought, the singularity of the *manner* in which it is drawn up, will scarcely be considered as either judicious in itself, or very relevant to the subject. Where misrepresentation is displayed instead of argument, and unmeaning flippancy instead of calm discussion, impartial men, I am persuaded, will find good ground to doubt either the soundness of the reasoner, or the strength of his cause. He, who loses his temper, gives the best evidence he *can* give, of his conviction of the inferiority of his own arguments; and that he labours to obtain, by clamour and virulence, what by reason or candour he is unable to accomplish.

IN my whole Account, it will, at least, be admitted, that I acted with fairness, as well as with urbanity: And it will not be said, even in the necessary exposure of a most culpable Miner-
alogist,

alogist, that I indulged in illiberal sarcasm, or in personal invective. True it is, that to the Edinburgh coalmasters I threw down the gauntlet; and, having done so at once, I feel no disposition to shrink from the contest. Following the precept of one of the greatest masters of ancient wisdom, it appeared clear to me, *ius maximum esse periculum, qui maxime timent; audacia pro muro habetur*; or, in other words, that temporizing is, at best, but weak policy; and that the safest, no less than the boldest method, is without hesitation to "take the bull by the horns." That the interests of the Canal, and of the Metropolis, (which, as well as of the nation at large, are inseparable) and those of the gentlemen in question, must ultimately have clashed, it was not difficult to foresee. After the maturest deliberation, therefore, it seemed to be as well, in the first instance, manfully to encounter our fiercest adversaries; because, should we succeed in discomfiting them, of which we little doubted, it would prove a lighter task, to sustain the onset of far less interested,

terested, and, of course, less inveterate assailants.

THE author of the "Observations" we are now about to examine, I have some reason to think, is himself not of this formidable corps; yet he appears to have found, in my book, a variety of cause for irritation. The superior advantage of shallow over deep sinkings in coal-mines, was confidently maintained, and the "cylindrical happiness" of a certain gentleman in the west as unfortunately invaded*; on both which accounts, his friend, the present writer, means to be very severe, and he is, without doubt, very angry; especially as I had stood up for a line of Navigation, that would prove utterly useless to the above gentleman's furnaces, and, what was still more unpardonable, to his coal-partner's works. Besides, I had audaciously gone the length of pointing out a method, whereby the

* See my former pamphlet, page 64—66.

the city of Glasgow would, in future, be exempt from all apprehension of monopoly, so deep laid and dangerous as that which had once threatened to distress it. This last was of all my crimes the most inextinguishable; for *Monopoly* seems a topic, at once congenial to his temper, and dear to his heart. He defends it, as the Italians say, truly *con amore*, with a partial affection; and, whether it be attacked in the east, or by good fortune defeated in the west, he naturally regards every effort to counteract it, as a virtual encroachment on his prerogative, and a sort of personal insult offered to himself.

THERE is, however, one condition of the contest, of which I have some cause to complain. While I fairly and openly display my name before the public, I am called forth into the arena against a masked gladiator, who, like Jack the Giant-killer, has his invisible cap, and wraps himself up in his "coat of darkness." That such conduct is attributable to one of two motives, is abundantly plain. Either the

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"Observer" is *afraid*, or he is *ashamed* on account of his book; and I leave it to his coal-friends or himself, to make choice of the alternative. What his real name or character may be, seems of little moment to the question, and is of still less to the public. A Coal-owner of Mid-Lothian, an able Advocate of Edinburgh, and a certain Merchant, and formerly a landholder in Lanerkshire, who is *now* in lack of other occupation, have been variously suspected by prying curiosity. As to the two first, their talents as writers, and, still more, their respectability and candour as men, wholly forbid the idea. For there is, throughout the performance, a wilful misstatement, a determined petulance and self-sufficiency, incompatible alike with liberal attainments or solid knowledge; not to mention the counting-house phraseology with which it is filled, and the defective grammar and provincial barbarisms with which it is disfigured. An "unlettered" Coalmaster is, it seems, the title which he has discreetly chosen to assume*: But, if he was anxious for the honour

* See Observations, page 3.

nours of that epithet, so superfluous, though, at the same time, so commendable a modesty might, without doubt, have been spared, as he had most amply deserved them in his proper character.

IN the midst of strictures so unqualified, which justice forces me to make, on the literary merits of this writer, it should not be forgotten, how very greatly I stand indebted to him on the score of compliment. He has courteously said, that my pamphlet, hasty as it was, is yet "learned and ingenious," and that it is "well written, and well intended." Resolved, as I am, not to be outdone by him in politeness of encomium, I will also declare, that his performance, if not elegant, is at least "ingenious," and, for the interests of his employers, the coalmasters of Mid-Lothian, very "well intended;" moreover, that it is distinguished by a sarcastic humour, and, in several places, by a coarseness of ridicule congenial to the pit; and, above all, that his statements are made

made with the same gravity and confidence, as if either the facts on which they are built, or the calculations they exhibit, had all along imposed upon himself.

WITHOUT doubt, there is one other circumstance, that will forcibly strike the disinterested and impartial, viz. the very different conduct, in regard to professional points, observed by me, and that manifested by my opponent. In my pamphlet, I am persuaded, will be seen a wish with care to avoid all technical intricacy. By simplification of detail, and fairness of reasoning, it is calculated, at least, to be generally intelligible, as well to the country gentleman and the coal-master, as to the Leith and Edinburgh citizen. Throughout his book, on the other hand, a scientific display is studiously affected. Under the name of "data," terms of art are introduced, and intricate calculations are needlessly instituted; while the barbarous jargon of the miner and the coal-viewer veils the features of a most obvious argument from the common eye. In the labour of detecting
this

this specious, but shallow artifice, I once for all declare, that, on my own account, I make no complaint. I am ready and willing to meet the author on the particular ground he has chosen to take up, happening to be, though not a *monopolist*, a pretty old Coal-master, as well as himself. Yet I lament that a question of such public moment should be thus fairly appealed, from the enlightened part of the community, to the few only who are conversant with the mysteries of coal-business: And I shall, for that reason, do what in me lies to disentangle the perplexity in which it is involved; to remove the heap of calculations with which it is covered; and bring the principal points, at least, once more to the view of unscientific eyes, and common understandings.

THE first object of the Observer's merriment is my appeal to Theophrastus, a writer with whom I will, on his word, believe he is utterly unacquainted. Willing to amuse, and perchance instruct some portion of my readers, I imagined that it would be a pleasing circum-

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stance,

stance, to trace the knowledge of pit-coal to so early an age as that of this ancient philosopher; and surely "the schoolmaster*" might here have been called in, to construe the passage, and examine the context. Since, however, the uncouth and unintelligible appearance of the Greek character has given so much cause of offence, I faithfully promise to atone for my crime, by an avoidance of similar presumption, during the entire course of the present pages.

AFTER declaring his ignorance of the coal-country of Greece, as well as of its naturalists and philosophers, our facetious author proceeds directly

* Among the few assertions made by the Observer, which I am by no means inclined to dispute, is the one wherein he assures us, that he is an "unlettered Coalmaster," and without pretensions to information or knowledge. When he has occasion, therefore, to venture upon a classical quotation (as in one place he has done with some humour), he very judiciously calls in the assistance of the "Schoolmaster" of the parish; a practice which he might, with great advantage, have extended to the other parts of his composition.

directly to the main scope of his performance. Having myself no pretensions to humour, and no turn for wit, I mean, without any notice, to pass over the choice specimens of both, with which he has enriched it, and confine myself solely to the grosser, and less volatile parts of his book. His argument, I apprehend, may pretty nearly be comprised in the two following propositions. He undertakes to show,

I. THAT the coal of Lanerkshire, however cheap in price, and surprizing in quantity at this moment, must, if once worked on an extensive scale, rise to a rate nearly as high as in any other quarter of the kingdom; and that this, together with other circumstances, would completely prevent its owners from being able to contend, with the eastern coaleries, in the market of the metropolis. And,

II. HE maintains, that the city of Edinburgh, supplied as it is with fuel, lies entirely at the mercy of the coalmasters of Mid-Lothian; such being the superior advantages which those

gentlemen possess, and such their extraordinary powers to counteract competition, that whoever shall attempt it, must commit the proverbial folly of "bringing coals to Newcastle," and, of course, fail in his enterprize.

To those who have, or have not read my pamphlet, the Observer, I imagine, will appear to have undertaken a task of some difficulty. To do him justice, his arguments are brought forward with sufficient address: Nay, such is the confidence with which he varnishes the weak, and displays to the view the specious parts of his system, that I shall not wonder, if he have already shaken the faith of many as to the value, and even the very existence, of the Lanerkshire mines; and he has, beyond doubt, confirmed the triumph of those interested coal-owners who wish to maintain, that a more cheap and plentiful supply of fuel to the capital is a mere illusion of the fancy. As the whole must be regarded in the light of a formidable manifesto, in behalf of certain coal-proprietors in Mid-Lothian, it will be grateful to the
friends

friends of the intended Navigation to perceive, how entire and unhurt their cause will come forth, from so diligent a scrutiny, and so fiery an ordeal. In regard to myself, I cannot but feel, that he who opposes facts to arguments, and demonstration to theory, has no need to despair; and that the light of TRUTH, like the light of the sun, though obscured for a moment, will in the end fully shine forth, and dispel every cloud of artifice or ignorance.

WE will now proceed to examine the above propositions in their order. As to the *First*, it is neither more nor less than an attempt to prove, that shallow sinkings in coal-mines have, over deep ones, no advantage whatsoever; and that the price of the commodity, instead of depending on the expence at which it is worked, is entirely to be regulated by the quantity that is sold. For this purpose, the author professes to give a comparative view of a coalery situated in the canal-district of Lanerkshire, and one in Mid-Lothian, about six miles distant from Edinburgh. Previously, however, it is found

found convenient to make an estimate of the probable length of time that both Edinburgh and Glasgow might be supplied from shallow pits in Lanerkshire ; and these he very ingeniously confines to only 10 fathoms deep.

IN this curious calculation, it is impossible not to be impressed with gratitude for the very *favourable* suppositions, which, we are kindly assured, are made in regard to the great Lanerkshire Triangle, or coal-country. It comprises, according to my statement, about 55,000 acres, and is 22 miles in length. It must, therefore, as our author observes, be, of course, nearly five miles broad. But this is merely the average breadth ; and he seems entirely to have forgotten, that, from the nature itself of the figure, the western, and comparatively the exhausted division, is not above three, while the far greater portion, from Hollytown eastward, is no less than about eight miles in breadth. However, as he means to be *very* kind, he includes both these divisions in his hypothesis. “ I shall put the case,” says he,
“ in

“ in the most *favourable* point of view for his
 “ (*i. e.* my) argument, and suppose the level
 “ of the coal to be exactly parallel to the great-
 “ est length of the field, and that the coal runs
 “ to the crop through the whole. This, then,
 “ will give a chain of pits, at 10 fathoms deep,
 “ for a stretch of 22 miles. I shall also take his
 “ first, and highest calculation, that all the
 “ seams amount to five yards thick. As he does
 “ not mention the exact number of these seams,
 “ I shall likewise take that in the most favourable
 “ point of view, and suppose, that there are three
 “ equal seams of five feet thick; which, every
 “ coal-master will join me in allowing, is the
 “ thickness most easily wrought. . . There will,
 “ then, for the supply of Edinburgh and Glas-
 “ gow, be a range of pits 10 fathoms deep, the
 “ coal being five feet thick, of 22 miles in
 “ length. In some particular places, this coal
 “ may run to the day, in the face of a rock:
 “ But, in a general view of an extensive coun-
 “ try, it is giving a very favourable allowance
 “ to suppose, that the coal will continue in, till
 “ within five fathoms of the surface*.”

From

* See Observations pp. 6. 7.

From the lamentable want of professional "data" in my book, he is next under the necessity of supplying their place. This he again does in the kindest manner; supposing that the coal, though "so near the surface, will dip no more than one in six." We, therefore, have, continues he, "a draught to the crop of the coal, or where it is lost in the earth, of 30 fathoms, or 60 yards; which, extended on the level for 22 miles, will give about 400 acres of workable coal: And this being repeated, in the same manner, on the crops of these different seams, will increase the number of acres to 1200, being the whole that can be wrought at 10 fathoms deep; and from which, as the coaleries near Edinburgh and Glasgow will be annihilated in a month, these two cities must depend for supply †." After premising these things, he informs us, that, in order to furnish 12 cwt. of saleable coals at the pit's mouth, nearly 18 cwt. must be put out; and, to deliver the same quantity in the metropolis, at least 20 cwt. All which, and

† See Observations pp. 7. 8.

and other circumstances considered, he declares it to be very clear, that 8 or 10 years, at most, are "an ample allowance" for these coals to last, at 10 fathoms deep, for the supply of Edinburgh and Glasgow.

HAVING thus successfully limited the whole quantity of cheap coals that the triangle of Lanerkshire is able to produce, he concludes, that the present low price of 1s. 6d. per 12 cwt. cannot possibly continue, even at 10 fathoms deep; "how much less, then," says he, "at the depth of 30 fathoms, which every man of science in that line will agree, is the least depth, at which a coalery of any extent can be won to advantage?" At length, rising in his argument, and resolved to overwhelm me with the vastness and rapidity of his conceptions; "Is the learned author aware," he says, "that, before he can supply these cities, he will require 1200 colliers, and, at least, 80 coal-pits, and probably considerably more, of the depth of 10 fathoms? Does he know, that, even if these men were to be found, they

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" would

“ would not cost less than L. 20,000; and that
 “ the other expences, even upon his 10 fathom
 “ scale, in pits, gins, horses, buildings, and
 “ other apparatus, could not probably be less
 “ than twice as much? . . . It may be said, that
 “ they will come on by degrees; but this is
 “ not according to the author’s theory, nor, in-
 “ deed, will it answer the purpose; as the Ca-
 “ nal must be completed in two years, and the
 “ coaleries near Edinburgh annihilated in a
 “ month*.”

By men conversant with the subject, it will
 readily be seen, that my chief difficulty here
 lies, in treating reasonings like these (if reason-
 ings they may be called) with any degree of
 seriousness. Such persons will, at a single
 glance, perceive their manifest absurdity; and
 they will agree with me in thinking, that any
 argument, which is built on premises out of na-
 ture or impossible, must necessarily carry along
 with it its own refutation. Had I to deal on-
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* See Observations pp. 11. 12.

ly with *real* coalmasters, I should, at once, refer them to their own experience, and to the candid and able Report of Messrs Busbys lately printed *, and consider it as superfluous to say another word upon the subject; because it fully appears, that the unbiaſſed evidence of those gentlemen has, in the amplest manner, verified and confirmed all I formerly asserted, and, indeed, much more, concerning the eastern division of the Lanerkshire coal-districts. According to my plan, however, I shall be forced to enter somewhat more into detail. By the lawyers, I think, it has been decided, that, in their department, *Superflua non nocent*; and the same maxim may, with equal justice, be applied to our present purpose. In spite of the ample room that any thing like illustrative de-

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* See Survey and Report concerning the Coal in the counties of Lanerk, Linlithgow, and Edinburgh, connected with the Batten-Moss line of Navigation, from Hollytown and Dalziel Kirk, eastward towards Edinburgh. By John and Daniel Busby, Coal-viewers and Mineralogists. Printed for the use of the Subscribers.

tail, on so obscure a topic, may probably give for cavil or misrepresentation, I shall yet venture to convey, to the ordinary reader, some notion of the "lie," as it is called, or situation of the strata or metals, in an extensive coal country.

IN the history of the fossil or mineral kingdom, owing to the endless varieties and anomalies of nature, it is difficult, if not impossible, to prescribe any absolute laws by which it shall be governed, or its productions universally, and uniformly judged. All attempts, therefore, to describe, with perfect precision, the lie or situation of the coal in a considerable tract, must be liable to objection. Perhaps, in a *general* view, it may be comprehended in one or other of the three following cases.

FIRST, the coal may be situated, as is supposed by our author (p. 6.), with its level parallel to the greatest length of the field. This is a case, which, on account of slips or dykes, or
other

other inequalities, seldom occurs for any great length of way, at least in Scotland; and on a very extensive scale, such as 22 miles long, it never yet was found in any quarter of the globe. No doubt, were the fact otherwise, the consequences would be such as the Observer has described them; but he perfectly well knows that his supposition is impossible. In some parts of England, where dykes are less frequent than in the northern parts of the island, examples do prevail, to a greater extent than any known to us; but it is very clear, and it is consistent with experience, that sinkings to an immoderate depth must, in such a country, become unavoidable.

THE Second case is, where the lie of the coal bears a resemblance, in a great measure, to that of the surface, unless where interrupted by dykes, hitches, or occasional troubles, which in all situations are found more or less to prevail. This is the case of all others the most favourable for working; as it is evident that a winning may here be made to the dip, taking
in

in a great extent of the field, with little increase of the deepness of the pits. Of such a situation examples are abundant, in almost every coal-country in the world. Their frequent occurrence, in the course of the survey of Messrs Busbys, is particularly remarkable; yet our author has cautiously excluded any such idea from his curious Lanerkshire hypothesis.

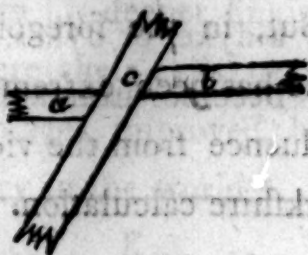
THIRDLY, the coal may be so situated as to dip to the hill, which is different from either of the foregoing cases; in which predicament it is obvious that the seams must, in a short time, bury themselves to an extraordinary depth. But here it frequently happens, that other seams gradually appear, or "take on," as the hill rises; or else the seams first mentioned are thrown up by a dyke, or dykes, to the surface, and so again become attainable as before*.

By

* The ingenious Mr Kirwan, in his Geological Essays lately published, has some excellent ideas on the nature and formation

By one or other of these accidents, it is curious to observe, in circumstances of themselves certainly untoward, with what success, and even with what facility, the coal often may be followed, over a considerable tract of country, seldom having recourse to deep sinkings; and thus procuring, at a very moderate expence, a supply

formation of seams of coal, and its concomitant strata. Of slips or dykes, he says, "it has been observed in Britain, that if the slip or dyke overhangs on one side, and consequently forms an acute angle with the seam of coal which it cuts, the continuation of the stratum will be found lower on the other side of the slip: And consequently, *vice versa*, if it recedes from, or forms an obtuse angle with the seam of coal on the one side, the continuation of the seam will be found higher on the other; as in the figure below, where *a* and *b* denote the interrupted seam of coal, and *c* the obstruction, dyke, or slip."



See p. 295.—233.

supply for the most extensive demands; and the greatest markets. The fact is, that dykes, which, in every situation, are liable to occur, are, when taken in a *general* view, rather beneficial than disadvantageous. In some cases, it is true, they may, and do prove indubitable evils; and, although by ignorance and inexperience they are regarded always as such, they are often productive of advantages the most extensive, and far exceeding the labour necessary to penetrate them; a labour, however, which is not unfrequently enhanced by the unskilfulness of overseers, or the equal ignorance of professed coalmasters themselves, who, were their sphere of observation more enlarged, would see and acknowledge their utility. Whether I am to class our present author among the really, or the wilfully ignorant of this important doctrine, I shall not pretend to determine: But, in the foregoing case, it is certain, that he has been extremely careful to conceal its influence from the view, in his ingenious Lanerkshire calculation.

WERE

WERE I called upon to adduce the most prominent example, with which I am acquainted, of the real utility of dykes, I should appeal to that valuable coal-field, belonging to Sir John Henderson of Fordel, on the Fife-coast; and which, I believe, is superior in natural advantages to any that Mid-Lothian can boast. There the face of the country greatly resembles some parts of Lanerkshire. The general dip of the coal is to the north, and, at least, one in six; while the rise of the ground is towards the same quarter. Yet, notwithstanding, the coal is kept, as it were, floating near the surface by means of dykes, for the space, if I recollect, of between three and four miles, and is most advantageously worked at six, eight, and ten fathoms deep; yielding, in such cases, to the judicious owner, a profit far greater, than he has ever derived from his deeper sinkings, or ever could derive, were their evils to be palliated, and their advantages improved, by the most perfect machinery in the world*.

E

OF

* Of the very advantageous mode of working here practised

Of the three cases above enumerated, the second, generally speaking, is the most favourable. It is the situation of the coal that most commonly presents itself in the eastern Canal-districts; and, during their whole survey, nothing seems to have struck the Messrs Busbys more, than this fortunate situation of the metals. No doubt, it may be imagined that the other cases also occur, as well as many anomalous instances impossible to be enumerated: But from the general prevalence of the second case, from the certain utility of dykes, as well as the rich, and almost untouched state of the mines throughout the tract just now mentioned, those experienced coal-viewers do not hesitate to declare their conviction of the "*inexhaustible* quantity of coal," that may be worked by shallow sinkings; and that it is every

fed let the reader judge, when he is informed, that $2\frac{1}{4}$ d. per 3 cwt. is the entire expence of bringing the coals to the surface, exclusive of the trifling labour of sinking the pits, a labour which is executed, on an average, at the rate of L. 1. per fathom. At such pits, as may be imagined, no expensive machinery is needful, but bearers always are employed.

every way adapted to supply “ a large home
 “ consumpt, and also the export trade, for
 “ centuries to come.” They are fully satisfied
 that, in these districts, “ the seams of coal, by
 “ reason of dykes, are kept throughout near
 “ the surface ; and that the lie of most of
 “ them is very advantageous, by being *similar*
 “ to it. The general dip of the coal is to-
 “ wards the Clyde, and the *other* rivers ; and,
 “ as it is evident that the declivity of the sur-
 “ face is generally towards the same points, so
 “ the *natural advantages* thereby occasioned
 “ are very great, both in regard to the *conti-*
 “ *nuation* of the coal-fields, and for working
 “ them *at a moderate expence, by shallow pits,*
 “ *to a great extent, and for a very long duration*
 “ *of time*.*”

Of the principal advantages that give rise to
 such extraordinary facility of working, and
 must insure the continuance of shallow pits in
 the Canal-country, they give an admirable ex-
 ample ; which, as it is not only beautiful in it-

* See Messrs Busbys Report, p. 9.

self, but borrowed from real practice, we shall
 here subjoin, for the more perfect illustration of
 our principle. "Bonhar or Budhar coal," they
 observe, "is about 10 miles distant from the
 "Clyde, and eastward of Gairon, and it does
 "not dip to that river. It is now working by
 "(we believe) Lord Torphichen, and will be
 "found dipping N. 40. deg. E. while the de-
 "clivity of the ground is towards the same
 "point*. About $\frac{1}{4}$ th of a mile towards the dip
 "of this coal, the same seam is working by
 "Lord Polkemmet; but it dips N. 60 deg.
 "W., while the declivity of the ground is also
 "towards the last mentioned point. This com-
 "plete change in the lie of the metals is oc-
 "casioned by a dyke; which, together with
 "the very favourable shape of the ground,
 "gives, to each of these proprietors, an im-
 "mense field of coal, lying in an opposite di-
 "rection, and in a most favourable situation
 "for working. The same observations are
 "equally applicable to many other parts of
 "our survey: But, in a country so full of un-
 "worked

* See Messrs Grieve and Taylor's Report.

“worked coal, it appears to us needless to multiply examples*.”

FROM these obvious doctrines, and the first professional testimony in the kingdom in favour of the coal-districts, I leave it to the reader to judge of the monstrous absurdity of allowing no more than *ten years* of endurance to the mines workable at ten fathoms deep; and of the very *favourable* calculation of a breast of coal of only *sixty yards broad*, over so prodigious an extent as two-and-twenty miles in length, and five, on an average, in breadth! The Observer himself, with great candour, (and candour with him is a rare virtue) admits the triangle to contain a supply of fuel, for the metropolis, at least twelve times greater than his favourite tract, within six miles of the city†. Now, supposing, for illustration's sake, such a tract to be as entire and unworked as the eastern parts of Lanerkshire, what would he say to the soundness of the calculator, who should gravely assign to it a similar draught of coal, that is, only 60 yards in breadth; and thence
infer,

* See Report pp. 9. 10.

† See Observations p. 5.

infer, that, even in the most favourable view, and with 10 fathom pits, it would last the city of Edinburgh about 9 or 10 months? Would not he immediately appeal to facts, and remind this ingenious person, that, with the aid of an adjoining country of no great extent, it had *already* lasted at least 200 years: And, as the use of complicated machinery had been known only for about half a century in Scotland, so it could be of late years, and in few instances indeed, that men had been able to descend below 10 fathoms deep.

THE striking difference between the Lanarkshire and the Mid-Lothian mines it requires no great coal-knowledge to discover, and as little to comprehend: All the coal that could be obtained, with little cost, is exhausted in the one, while, from want of demand, it remains almost entire in the other. In other words, the state of the former country is such, that, simply by means of its "natural advantages" (as Messrs Busbys have expressed it), the metropolis could be plentifully, and cheaply

ly supplied by it for ages. In the latter district, on the other hand, such advantages do no longer exist, and the coal-fields are undeniably of far inferior extent. From the repeated winnings already made, the seams must be laid hold of much farther to the dip: Machinery of vast power, and consequently of expence, must be resorted to*; and as the outlay of capital is incomparably greater, it can excite no surprise that the selling price of the article should be at *four times the rate*. This is what I used the freedom emphatically to call the practice of the "New School," in contradistinction to that of the "Old." The Old practice had its origin when the art of mining was in its infancy; and, wherever it is practicable, it will still continue to prevail, while men shall remain sensible to the value of labour, or prefer the shortest to the longest road to their object. In regard to the methods adopted by the "New School," they owe their invention

* At Polton coalery, for example, a steam-engine is employed, with two working barrels; the one, I believe, of 9, and the other of no less than 12 inches diameter.

vention to *necessity* alone, and are embraced only in situations where the easiest and most attainable portion of the coal-field is exhausted. These are distinctions which our "unlettered Coalmaster" affects not to understand. He does not, indeed, with the wildness, or rather the weakness, of his "cylindrical" friend in the West, venture *publicly* to deny them; but he dexterously, in the modern phrase, gives them the "go-by" in his book, and labours to conceal them from the reader's view.

BUT, says he, "I do not, by any means, presume to dispute, that, in the present situation of the coal-works in this district, coals can be, and are delivered, at the price of 1 s. 6 d. for 12 cwt.: But I must be allowed to say, that, from theory, and from experience, the best of all tests, I am morally certain, that when these works come to be extended, this will not continue to be the case, even at the depth of 10 fathoms: How much less, then, at the depth of 30 fathoms, which every man of science in that line

“line will agree is the least depth, at which
 “a coalery of any extent can be won to
 “advantage*?” Now Coalmasters, as well
 as Doctors, will sometimes differ; and *I* am
 “morally certain from theory, and from ex-
 “perience” also, that the price *will* continue
 the same in shallow sinkings, on an extended
 scale, and with pits of even 10 fathoms deep.
 I would just ask the facetious Author, at how
 many of the works in Mid-Lothian, coalma-
 sters ever went down so far as 30 fathoms, prior
 to about half a century or fourscore years ago;
 and at how many above 10 fathoms deep? And
 surely the Mid-Lothian coaleries were then
 coaleries of some magnitude, and importance,
 since, as we have already said, they have sup-
 plied not only the metropolis, but the whole
 adjacent country from a pretty remote period.

IN regard to the present question, let “men
 of science” decide between us: It is to such
 alone, if truly impartial, that I should wish to
 submit it. The Observer first of all supposes

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* See Observations pp. 10. 11.

what never existed in *nature*, a field of coal of 22 miles long, with a chain of 80 pits, and the level running parallel to the greatest length of the field. He further supposes, what never existed in *practice*, the whole of these pits to be immediately on the water-level (for there unquestionably they must, by his hypothesis, be placed, since he reckons no more than 60 yards of coal to be worked towards the crop): And, then, from such premises he draws his conclusion, which is alike hostile to experience, viz. that no extensive coalery, with shallow pits, can be won to advantage. But, for that purpose, is it absolutely necessary that *all the pits* in a coalery should be 30 fathoms deep; or that the denomination of shallow pits should be confined to 10 fathoms? I believe no man of science will pretend to say so. Supposing, on his own hypothesis, that it were advisable to go down to 30 fathoms, one pit of that description, for each coalery, would be completely sufficient, to answer the water-level, or line of bearing; together with a very small force of machinery, to draw the water from such a deepness. To the rise of this pit working ones
would

would naturally be sunk, as the case might require, to 10, 15, or 20 fathoms, which are still shallow pits; and from such a winning, it is obvious, that, on his own data, no less a draught of coal than 150, instead of 60 fathoms, would be obtained. It is perfectly well known that coals are drawn by horses several rooms to the dip; and, by means of bearers, (which is by far the cheapest method) it is equally certain, that they might, upon occasion, be brought from the water-level to the coal-bank, even with no more than 10 fathom pits.

I CANNOT really conceive any coalmaster to be ignorant, that in this manner considerable workings may be made to the *dip* of a chain of pits, as well as to the rise; and every miner knows, that, in no work existing, where the dip is only one in six, there was ever seen so much as a single pit, except the winning one, *immediately* on the water-level. Let it be observed, that, in the above statement, we have gone upon the supposition, that machinery *must* be used to get quit of the water. However, it is in

particular situations only in Lanerkshire that that expence would at all be necessary. Deep ravines, and beds of rivulets every where intersect the country ; and as these afford the most favourable opportunities for procuring levels at an inconsiderable expence, ages must elapse, before the level-free coal, in such a district, could possibly be exhausted.

Thus, it appears evident, in a wide and unworked tract of country, and with a situation of the coal varied in the three ways we have just now described, as well as in a great many more which it would be impossible to enumerate, how the most extensive works may be carried on, *without* any increase of the difficulty of working, and consequently of price to the consumer. And here it is impossible not again to remark the striking superiority of the Old School over the New. In the practice of the New School, from the enormous expence attending the sinkings and the machinery, a costly and extensive scale is the *only* footing on which it can subsist, as is indeed amply acknowledged

known by the Observer. By that of the Old, as we have seen, works may be carried on to a greater, or to a smaller extent, just as the demand may require; because, with shallow sinkings, all ruinous expences for oncost are avoided; every new pit, in some sort, becomes a new winning; and the water goes off, by levels, to the greatest advantage, and at the easiest possible rate.

To ascertain the period of time, to which these low prices, and easy and advantageous modes of working might be continued in Lanerkshire, is not easy; but, for the information of the reader, and from the data which have been furnished by our “unlettered Coalmaster” himself, we shall attempt the calculation. There exists a coal-country, he says, within six miles of Edinburgh, still capable of lasting the city for 500 years; and he also admits, that that of Lanerkshire might suffice, for the same purpose, during a *far greater space* than we had even ventured to assign to it, viz. that of 5749 years*: But let us accept only, for the present,

* See Observations pp. 5. 6.

sent, of the moderate additional number of 1251, and be content with an allowance, in all, of 7000 years. In other words, as the coal country of Edinburgh, by the latest calculation *, has already supplied the city during 200 years, and coal for 500 more still remains unexhausted ; let us say, that the present stock of the one district is only ten times more considerable than the original stock of the other ; a computation, which our author will, without doubt, think “ greatly within the mark.”

Now, it is a fact generally believed, as we have said above, that expensive machinery has been introduced into Scotland only within about the last 50 years: The supply of Edinburgh, therefore, for the preceding century and a half, must have been derived from pits, which were pretty near to the surface. Consequently we see, supposing the natural advantages

* The fact is, that it has supplied it greatly longer.—
See my former Publication pp. 10. 11. 12. and Notes.

tages of both districts equal, (which, beyond question, for the east is a very favourable concession) that no less than 1500 years must necessarily elapse, before the Lanerkshire workings would require to be so deep, as those of Mid-Lothian in the present period. But possibly it may be said, that the increasing population, and, consequently, the increasing demands of the metropolis, both now and in future, should be taken at a third part greater than heretofore: And, surely, no one will think that this is not an allowance sufficiently ample. If one-third, therefore, be deducted on that account, there will, of course, remain *one thousand years at least*, for the coal-fields of Lanerkshire to be worked, *before* they could encounter any of those difficulties, or be subjected to that intolerable expence, which now press upon their rivals. Besides, in the words of the Observer, "it must be a great consolation," indeed, to the city of Edinburgh "to know," that it can be *cheaply* supplied with such an article as fuel, merely from the Lanerkshire seams nearest to the surface, for no less than *five hundred*

years

years longer, than it is admitted by himself that the whole of the coal, within six miles of Edinburgh, whether to the crop or to the dip, could possibly endure.

By these reasonings, I trust, the chief points of difference between deep and shallow pits will have been pretty clearly explained, (even to persons the least acquainted with the business) that is, between the coaleries of Lanerkshire, and those of Mid-Lothian. As our author, at page 27, formally undertakes an examination of the causes that affect their price, a few remarks upon his statement will very properly corroborate the foregoing account.

THE cost at the pit, he observes, in the Lanerkshire Triangle, is 1s. 6d. and, in the vicinity of Edinburgh, 3s. per cart-load of 12 cwt. This last, I presume, should have been 4s. 6d.; but I suppose, of course, (though with an allowance which the Observer has not always sufficient candour to give) that it can be nothing but a typographical error. “The charges,”

“ charges,” he continues, “ which constitute
 “ this price, consist of various parts: 1st, The
 “ expence of sinking pits; 2^d, Drawing water;
 “ 3^d, The price to the collier; 4th, Drawing,
 “ or carrying them to the pit-bottom; which
 “ admits of many improvements; 5th, The
 “ expence, and extra work below, which is
 “ commonly denominated oncost below; 6th,
 “ Bringing the coals from the pit-bottom to
 “ the surface, and packing them on the ear-
 “ riages, in which they are to be conveyed to
 “ the place of sale; or, if there be no imme-
 “ diate sale, stowing, or, as it is called in Scot-
 “ land, binging them on the hill...The only ad-
 “ vantage which the Lanerkshire coaleries have
 “ over the Edinburgh ones, or, in other words,
 “ shallow pits over deep ones, is the first, se-
 “ cond, and sixth articles of the above enu-
 “ meration; that is, in sinking pits, drawing
 “ water, and drawing the coals from the pit-
 “ bottom to the surface*.” Alarmed, how-
 ever, at so ample a concession, he proceeds

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* See Observations pp. 27. 28. 29.

to do it away, at least as to the first head, by the following curious illustrations. “ The
 “ difference in these respects would appear to
 “ be, supposing the draught to be 100 fathoms
 “ each way, that is, to the rise, and on both
 “ levels, in a seam of five feet thickness; a pit
 “ of the depth of 50 fathoms, will last at least
 “ two years, at the rate of 40,000 carts *per*
 “ *annum*. To put out the same quantity at
 “ 10 fathoms deep, will require, at least, three
 “ pits; because they are circumscribed, on the
 “ rise, to the breadth of 30 fathoms. In the
 “ first situation, it is supposed the pit may cost
 “ L. 250; in the second L. 30; that is, L. 90
 “ for the three; consequently, a saving in two
 “ years of L. 160, annually L. 80. But if the
 “ working of the deep pit shall be extended
 “ only 20 fathoms more each way, the differ-
 “ ence of which will scarcely be felt, it will
 “ yield fully another year’s work; which the
 “ shallow pit could not accomplish, but by
 “ carrying on the levels to fully the length of
 “ 220 fathoms each way; which, however,
 “ could be better attained by sinking new
 “ pits;

“ pits ; but this, again, will bring the expence
 “ very near to that of deep pits. Every Coal-
 “ master will see, that this arises from the li-
 “ mited extent to the rise, in pits of 10 fa-
 “ thoms deep, and cannot be completely ob-
 “ viated, but by going to the depth of 30 fa-
 “ thoms ; which must unquestionably have, at
 “ all times, a decisive advantage over either
 “ 50 or 10, in this respect *.”

Now, I have little doubt, from what has been said above, that the fallacious nature of this whole statement will be at once apparent to the discerning reader. In the First place, there are not many seams of coal, as far as I can learn, in the immediate vicinity of Edinburgh, (the edge-seams excepted) which are five feet thick ; that dimension, therefore, how applicable soever to those of Lanerkshire, cannot be assumed as a medium thickness, in comparing the latter with the coaleries in Mid-Lothian.

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SECONDLY,

* See Observations pp. 29. 30.

SECONDLY, for the supposed output of 40,000 cartloads, two pits only, instead of three, would be necessary, at 10 fathoms deep; because it is not by nature, by the Observer's strange hypothesis, that these workings are confined to 30 fathoms in breadth. In comparing shallow sinkings with deep, who but himself has limited the pits to 10 fathoms in deepness? And yet he talks of "*my* 10 fathom scale" with the same easy confidence, as if the whole idea had not actually been his own. I indeed said, (at p. 63. of my Book) that "from 6 to 15 fathoms" was about the deepness of the pits *now* open in the eastern districts; but does it follow from thence, that they could not be extended, if needful, to 20, 25, or even 30 fathoms; sinkings that, with justice, may be denominated still shallow and unexpensive? By means of the water-level, and *one* 30 fathom pit to each coalery, we have already shown how great a draught of coal might be obtained, even from 10 fathom sinkings. To extend the workings too far would prove more expensive than a new pit, which, at 10 fathoms

thoms deep, may be put down for L. 1, or L. 1, 5 s. per fathom, as a medium rate, and not, as most erroneously computed by the author, at no less than three times the price. Whereas, a 50 fathom pit, which every Coal-master knows, will, in most situations, cost from L. 6 to L. 7 per fathom, (unless under extraordinary circumstances, or where little boring to carry off the water is needful) is stated, with the same glaring partiality, at only L. 5 of expence.

THIRDLY, in the 50 fathom sinkings, he supposes the draught each way to be 200 yards, that is, to the rise and on both levels; and he even proposes to extend it each way 20 fathoms more: But it is beyond a doubt, that, in most cases, and in most situations, with an ordinary roof, no coalmaster of intelligence would work so; because he would readily perceive, that it was more advantageous to put down fresh pits at only 100 fathoms, or 200 yards distance. Thus, the industrious author not only exaggerates or curtails the expence of the different

sinkings,

sinkings, as best suits his purpose, but he authoritatively extends the limits of working to any distance he thinks fit. As to those in the 10 fathom pits, having, in the same manner, confined them by an absurd hypothesis, and created a difficulty where no difficulty existed, he assumes it as the support, and main pillar of his argument. However, in his conclusion I completely join issue with him, where he declares, that the going only to the depth of 30 fathoms must, at all times, have "a decisive advantage" over 50, and even over 10 fathoms, in situations where it is necessary to go down to the first mentioned deepness. A more ample acknowledgment than this, of the great superiority of Lanerkshire over Mid-Lothian, need not be desired: For, in his favourite tract within six miles of Edinburgh, 50 fathoms are stated, by himself, as the medium depth of the sinkings; whereas, in the eastern Canal-districts, there are many of the more attainable coal-fields first to be worked, before it become requisite to sink even to 30 fathoms deep.

IN fact, there is no man, at all conversant with the subject, who will, for one moment, seriously bring into comparison the situation of deep and shallow sinkings, any more than he will controvert the simple proposition, which I formerly ventured to advance as self-evident, viz. that "the *nearer* an object, other things being equal, the greater, of course, the facility of attainment*." But, on investigation, when we discover, that here the concomitant circumstances are very far from being equal, it is clear, that the difference between deep and shallow pits must obtain, in a ratio greatly more considerable, than the mere numerical relations of their depth. In our Coalmaster's statement of the various heads of charge that constitute the hill-price, and, of course, the data for comparison, he fairly gives up the *1st*, *2d*, and *6th* articles in favour of Lanerkshire, or the shallow sinkings: We shall, therefore, say no more about them. It is, however, pretty evident, from his manner of treating the three others,

* See my former Publication p. 64.

others, viz. the 3^d, the 4th, and the 5th, that they must, in the end, be given up also. The 3^d article, the collier's price, he perplexes in the detail *, by confounding it with the 6th, with which, even by his statement, it has no connection: And on the 4th and 5th, the drawing to the pit-bottom, and the oncost, he is very prudently silent altogether.

As to the price paid to the collier, and the drawing, or carrying to the pit-bottom, which are often united under one head, were any of his employers as well acquainted with the nature of the Lanerkshire, as they are with that of the Mid-Lothian coaleries. they would at once be convinced of the vast superiority possessed by the former. In the east of Lanerkshire, five feet in thickness (which the Observer himself esteems the most advantageous) is the average dimension of the seams; whereas in the district within six miles of Edinburgh, if we except the edge-seams, the thickness will be found

not

* See Observations p. 30.

not greatly to exceed three feet. The regularity of the backs also, which intersect the coal in the first mentioned country, (similar to those in some of the Newcastle mines) is another circumstance singularly favourable to facility of working. When to these is added the trifling distance from which the coal is to be drawn to the bottom of the pit, it will sufficiently account for the vast difference of the rates, on the two articles in question, in the east and west. At Gilmerton and Polton, for example, I believe, no less than 2s. 2d., and 2s. 3d. per ton is paid to the collier for mining, in which is comprehended bringing to the bottom of the pit. In the eastern division of the Triangle, both operations are performed at the rate of from 1s. to 1s. 2d.; and, in some favourable situations, such as Cleland, even so low as 10½d. per ton.

Of the 6th head, the amount of oncost, or extra-work below, our author, as we have said, very prudently waves the computation. This work consists in supporting the roof, and keeping clear the roads, and may be reckoned a-

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mong

mong the heaviest articles of expence and inconvenience, to which deep sinkings are subjected. It is evident, that the distance between one pit and another (be the depth what it may), will be extended just as far, as till the labour of drawing the coals to the pit-bottom, together with the supporting the roof, and keeping clear the roads, be equal to the expence of sinking a new pit. In shallow sinkings, oncost-work is next to nothing; because, with a good roof, the distance of drawing need never be great, and, with a bad one, the easy recourse of a fresh pit is always at hand. But where the sinkings are deep, this expence becomes enormous, and the labour of fresh excavation not less insupportable. Thus, in comparing the coal procured from a 10, and from a 50 fathom pit, the seams and quality being supposed equal, there is not only to be calculated the original cost of sinking, which is at least as one to six, together with the difference in drawing the water, and raising the coals to the surface, but there is likewise that of a most heavy oncost below. The difference, moreover,

over, which is to be added, between bringing them 100 fathoms, instead of 30 or 40, especially if the roof be bad, is prodigious: This falls on the coalmaster, and consequently on the price, in a necessary proportion to the grand article the sinking; which, as it constitutes the prime cause of the evil, must also, in the end, be adopted as its cure.

NOTWITHSTANDING these striking circumstances, which to professional men are well known, and which to the ordinary reader, I hope, are now equally intelligible, our "unlettered Coalmaster" can see no reason why "the Lanerkshire proprietor, after his works are fairly opened, is intitled to presume he will have an advantage over his antagonist in Mid-Lothian. That some coals (he owns) can be cheaper wrought than others, from many natural, and some accidental causes, is certain: But what title has a proprietor in Lanerkshire to suppose, that these causes will, or will not exist, through an untried district of near 100 square miles? or that, when he

“ comes to require the same extent of exertion in manual labour, and in management, that he will be able to command it cheaper near Carlisle, than in the neighbourhood of Dalkeith?...The habits of life (he thinks) of these people are totally different (from those of the present workmen in the west), and will require much higher wages to support them; which can never be afforded, but upon a large scale*.”

To these observations, I presume, it is almost unnecessary to answer. The obvious reason why the Mid-Lothian proprietor could have no sort of chance, in a competition with his opponent in Lanarkshire, is, in one word, the *natural advantages* of a rich, extensive, and unworked coal-country. The author himself pretty clearly, though reluctantly, admits the fact, when he confesses, that “ some coals can be cheaper wrought than others, from many natural, and some accidental causes.”

Now,

* See Observations pp. 31. 32.

Now, as these causes have been already fully detailed, it would be only a repetition of what we have stated above, to insist farther on the subject. But, says he, what right have we to suppose, that these causes must exist, "through an *untried* district of near 100 square miles?" The fact is, the country has been most *completely* tried, and is proved to contain treasures of coal unequalled probably in the island. If any man entertains a doubt as to the point, let him consult the two different Mineral Reports that are now before the public: And although Messrs Grieve and Taylor, for reasons best known to themselves, discreetly concealed the extent and value of more than one half of the district, yet the late surveyors have brought it more fairly to the view, and shown that it continues certainly within twelve, and most probably even within *four* miles of Edinburgh.

In regard to the assertion, that the colliers' wages are much higher in Mid-Lothian, than in the west, let no one implicitly believe, because the Observer, without knowledge, has
 chosen

“ comes to require the same extent of exertion in manual labour, and in management, that he will be able to command it cheaper near Carlisle, than in the neighbourhood of Dalkeith?... The habits of life (he thinks) of these people are totally different (from those of the present workmen in the west), and will require much higher wages to support them; which can never be afforded, but upon a large scale*.”

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Now, as these causes have been already fully detailed, it would be only a repetition of what we have stated above, to insist farther on the subject. But, says he, what right have we to suppose, that these causes must exist, “through
“an *untried* district of near 100 square miles?”

The fact is, the country has been most *completely* tried, and is proved to contain treasures of coal unequalled probably in the island. If any man entertains a doubt as to the point, let him consult the two different Mineral Reports that are now before the public: And although Messrs Grieve and Taylor, for reasons best known to themselves, discreetly concealed the extent and value of more than one half of the district, yet the late surveyors have brought it more fairly to the view, and shown that it continues certainly within twelve, and most probably even within *four* miles of Edinburgh.

IN regard to the assertion, that the colliers' wages are much higher in Mid-Lothian, than in the west, let no one implicitly believe, because the Observer, without knowledge, has
chosen

chosen to suppose it. In no part of the kingdom is the rate of every sort of labour more extravagant, than in the Canal-country at this moment; nor do the colliers there, where but a few only are employed at a place, either earn less, or spend what they earn with a grosser sensuality, than at the more extensive works of Gilmerton or Polton*. At the latter, I understand,

* That low dissipation, proceeding from exorbitant wages, has unhappily been carried to as great a height in the Canal-districts, as in any other part of the kingdom, it would be no difficult task to show; and of the fact the reader may take the following example. At the works of Lord Polkemmet, on the borders of Linlithgowshire, it is no uncommon thing to see a collier, his wife, and perhaps three or four children, lodged in a hole (for it has little resemblance to a human dwelling), of which the one side is composed of the peat moss perpendicularly cut down, and the rest built of loose stones, and clay made into mortar. In this miserable hovel there is usually little appearance of furniture, and none of cleanliness or comfort: And yet, strange to tell, such is the determined extravagance, and brutal sensuality of the inhabitants, that, on eating and drinking alone, not less than *one hundred pounds a-year* will very frequently be spent. Of the "sober and laborious"

stand, a man, with his wife, or his children to act as bearers to the pit-bottom, will make, on an average, nearly 5s. per day, that is, 3s. 6d. for the collier; and, at the coaleries in the Triangle, although 5s. and 6s. may sometimes be got, yet 3s. and 3s. 6d. may be stated as the general, or medium rate. But, even were the difference as great as the Author would have it to be, it by no means follows, that miners must necessarily earn 3s. 6d., in every situation where there are extensive works. In Fife, for example, the coaleries will not be said to be on a narrow scale; and yet, not any of their people make more than from 2s., to 2s. 6d. per day.

I VERILY believe this the *first* time that it ever was necessary, by a formal argument, to demonstrate the obvious superiority of shallow over deep sinkings, or of a wholly unworked, over a long worked coal-country. I trust, how-

“rious” habits of these simple men of “cot-houses and kail-yards,” or of the temperance and “chastity of their wives and followers,” let our Observer judge.

however, that the wild absurdity of limiting the cheap supply of Edinburgh, from a tract of 55,000 acres, to 8 or 10 years duration, is sufficiently apparent; and, I hope, it is equally clear, that those peculiar circumstances, which now moderate the price of coal, will act not only with the same, but even with a still greater effect, when applied to a scale of more extended operation.

I WILL next proceed to make a few cursory remarks on some other parts of the Observer's Lanerkshire hypothesis, on account of which I was unwilling to interrupt the tenour of my argument.

IN the course of the foregoing quotations from our author's book, it will not have escaped the discerning reader, that the supply of Glasgow, as well as Edinburgh with coal, has almost always been mentioned, in reference to my Account. So natural and necessary, indeed, does misrepresentation seem to his system, that he has not been able, even in the title of his pamphlet, to copy with accuracy from the
title-

title-page of mine. My intention was, to give
 “ An Account of a Plan for the better supply-
 “ ing *the City of Edinburgh* with Coal;” and
 it will not be thought, that I have been very
 guilty of wandering from the main scope of
 the argument. It is true I did at page 21, ad-
 vance an opinion, in which every impartial in-
 habitant of Glasgow will agree with me, that,
 by opening a communication with the internal
 districts, the better supply of that city might
 eventually be promoted; for such a communi-
 cation would operate as a check on the views
 of *monopolizing* coalmasters, and all attempts,
 in future, to distress the place, would thereby
 prove ineffectual. I likewise expressly added
 the belief, that it must still continue to be sup-
 plied, but with increased advantage, from *its*
own coaleries. Notwithstanding all this, is it
 not remarkable, in the author’s statement of
 my theory, that the demands of both Edin-
 burgh and Glasgow are generally united? Nay,
 such is his solicitude for the prosperity of Gree-
 nock, that a more ample provision of coal for
 that place also is included in some of his calcu-
 lations;

lations ; and it is well that his philanthropic views do not, in like manner, extend to every town, and sea-port in the west.

WHEN we candidly consider the acuteness of his feelings, and the very *peculiar* nature of the ground he had here to tread, some allowance, perhaps, in charity should be made, even for such misrepresentation. Great as we know the aversion of the canine race to be to water, when afflicted with that deplorable disease which has from thence derived its appellation ; yet far greater, I am persuaded, and far more deep-rooted is the abhorrence, that the thorough-bred *Monopolist* involuntarily feels, to fair competition, and to every scheme for diffusing the equal benefits of trade. Like the lame hound in the fable, though *shut up* in his kennel, and disqualified for the chace, he still continues, with violence, to give tongue at the starting, and pants after the game he is now unable to pursue, and which it has fallen to the lot of his fellows to participate. Let us, however, not forget, in the midst of a due consideration

sideration for infirmity or misfortune, that our Observer's uniform design has clearly been to mislead the ordinary reader ; to surprize him with paradoxes ; to perplex and confound him with technical details ; and thus to withdraw his attention from the main object of my book, which was, to show the vast difference in the price, as well as the extent of the coal, so remarkable in Lanerkshire and Mid-Lothian ; and the absolute certainty, on that account, with which a judicious water-carriage would procure it to the metropolis, at an expence far inferior to the present rates.

It was, also, on this clear and obvious ground, that I presumed to think, were the Batten-moss line of Canal carried into effect, that the coaleries near Edinburgh, at least in regard to the sale of the city, would probably be closed ; nay, that they could not advantageously subsist for " a single month." I moreover said, that the navigation itself might, in about " two years," be conducted as far west as the coal-districts. To Mid-Lothian coalmasters

these must be unpleasant truths ; accordingly, it is not wonderful that their champion should attack them, with all his ingenuity and wit. “ The learned author (he says) seems to think, “ the laying open 10,000 acres of coal, and the “ consequent destruction of the coaleries in “ the neighbourhood of Edinburgh *and Glas-* “ *gow*, a matter that requires almost as little “ labour, and not much more time, than open- “ ing and shutting his book *.” I shall pass over the circumstance, already noticed, of his forcing me, whether I will, or will not, to destroy the coaleries “ in the neighbourhood “ of Glasgow,” and observe, on the subject of Canal-making, that, it being wholly a professional point, I beg leave to refer him to any engineer of experience, who will attest the perfect *possibility* of executing the work, within the above mentioned space of time. Messrs Busbys’ Report has shewn, that the coal-districts extend the whole way from the Clyde nearly to Mid-Calder, within 12 miles of Edinburgh ;

* See Observations p. 11.

Edinburgh; so that, were workmen to be procured, (which, in the event of a peace, would be far more easy) and 10 or 15 miles only of the navigation annually to be cut, it is obvious what a tract of the great Coal-country would, within "two years," be opened up, for the trade of the capital. As to the eventual ruin of the Edinburgh coaleries, at least of those in his favourite district within six miles of the city, I must be permitted to say, that he himself pretty clearly admits it, as soon as, by a successful competition, their business shall be curtailed; because, as he acknowledges*, on a limited scale it is impossible for them "to exist." If, then, there be any truth in the foregoing reasonings (and on these I will cheerfully rest the point at issue) as to the mineral wealth, and natural advantages of Lanarkshire, the great probability, at least, of such an event will be completely proved, to the satisfaction of the reader.

By the report of Messrs Busbys it appears,
what

* See Observations p. 12.

what an immense tract of unworked coal-country there now exists in the counties of Linlithgow and Lanerk, reaching to within 12 miles of Edinburgh; a space of more than 17 miles long, and, in some places, 8 miles broad: And all this is *exclusive* of the “ellipsis” of Messrs Grieve and Taylor, on the banks of the Clyde; which alone is attested by those gentlemen to continue for no less than 20 miles together, and to form one of the greatest coal-fields in the world. Now, let the impartial reader, let the Leith or Edinburgh citizen only figure these important mines, or, at least, no inconsiderable portion of them, in “two years” laid open, as I still must maintain, though not just “so easily as my book,” for the market of the metropolis, if not of Europe! Then, indeed, there would exist no exclusive and arbitrary monopoly, in the hands of a few individuals, such as “the Hopes, the Wauchopes, and the Clerks;” (whose ardent affection for the city of Edinburgh our author has so loudly celebrated, and which I have no design to call in question) but, by means of the projected Canal, a most extensive

extensive competition, between more than 50 coal-owners, would be established. Possessing all the advantages of the "Old School," with all the science of the "New," they would, of course, strive to undersell one another in the Edinburgh market; and thus, while the price of fuel was reduced to the lowest possible rate, an accession, now inconceivable, would be made to the agriculture, the population, and the resources of the country. In such a case, I must continue to assert, that, within "a month" from the period that this great competition began fully to operate, (and I believe no man, besides our Observer, ever otherwise understood the expression) either the coalmasters in the immediate vicinity of Edinburgh must discover some extensive seams nearer to the surface, on which the practice of the Old School might again be renewed, or they must be forced to abandon the supply of the city.

No doubt, amidst this national prosperity, (a prosperity which England has uniformly felt,

felt, wherever Navigable Canals have been judiciously established) some complaints might be heard from the coal-masters of Mid-Lothian, and some sarcastical pamphlets be written by themselves, or by their hireling adherents. Yet it is consolatory to reflect, what a subject the latter would afford, for the admiration of the wise, and for the instruction of the inexperienced. By means of these productions, the simple coal-master would learn justly to appreciate the relative advantages of land and water-carriage. He would soon see, that the utility of canals, "like other novelties, has "been greatly overrated." He would be informed, that, for the length of six miles they are wholly *unprofitable*; and for 12 so completely *ruinous*, as certainly to enhance the article of coal, from 2s. 6d. per ton, the original value at the pit, to no less a price than 9s. 2d. (that is, 11s. for 24 cwt.), even with one of the best markets in the island situated at the extremity of so inconsiderable a distance*.

Should

* The author, in one place, labours to persuade us, that
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Should the Batten-Moss Canal be carried into execution, the coal-owners about Midcalder (who are nearly 12 miles from Edinburgh) may thus be considered as without excuse for their folly, should they, after so decisive an evidence against Inland Navigation, think of trusting their coal to its deceitful waters, when they might more profitably abide by the *high-ways* of the kingdom.

WE will now attend our “unlettered Coal-master,” in the view he has been pleased to give of a coalery in Mid-Lothian, and the comparison he has drawn between such a work, and one in the Triangle of Lanerkshire. The example, which is taken of the former, being with-

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the Monkland coals cost no more, at the pit's mouth, than 2 s. 6 d. per ton; and then he declares, in another, that the reason why they are sold so dear in Glasgow now, is “because they must be transported by an inland navigation.” See pp. 56. 59. Of this paradoxical nonsense we shall speak more particularly hereafter. For more of his opinions on Canals, see pp. 5. 35. 62.

in six miles of Edinburgh, we may be pretty sure, that the advantages of that chosen district are represented with all his address, and favoured with all his partiality. Accordingly, stating the depth at the medium of 50 fathoms, he supposes, "That a steam-engine, " with a working-barrel of $12\frac{1}{2}$ inches diameter, is necessary, but able to draw the water, " in 12 hours out of the 24: That the coale- " ry is otherwise in full work, and completely fitted with every accommodation required " for a long established, and well-going coale- " ry: That the great coals are, at this moment, sold on the hill, as is stated, at 4s. 6d. " per cart of 12 cwt.: That these coals, in " common times, sold at 7s. per cart-load in " Edinburgh; though, owing to the extraordinary dearth of provisions and provender, " the price has lately been raised to 8s.; yielding, in the one case, 2s. 6d., and, in the " other, 3s. 6d. to the carter*." Now, says he, " It is from such a coalery that I mean to draw " the

* See Observations p. 13.

“ the comparison with the Canal district of
 “ Lanerkshire. And here it will, no doubt,
 “ be obvious to every one, that it would have
 “ made a striking difference, had both fields
 “ remained untouched, but in a way some-
 “ what different from what the author has
 “ supposed. The expence of putting the E-
 “ dinburgh coalery in the situation I have de-
 “ scribed, and in which it indisputably stands,
 “ cannot be calculated at less than six or se-
 “ ven thousand pounds; and it must be con-
 “ fessed, that one in Lanerkshire would not
 “ perhaps cost a fourth part of that sum. But
 “ that is of no consequence in the present cal-
 “ culation, as the expence of the Edinburgh-
 “ shire coalery is already incurred; and, there-
 “ fore, as far as original expenditure is con-
 “ cerned, is superior to the Lanerkshire one
 “ by all the expences which the winning of
 “ the latter will occasion; and it is begging
 “ the question to say, that the Edinburgh
 “ coalery is exhausted *.”

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* See Observations pp. 13. 14.

I most heartily concur with him in the observation, that "it would have made a striking difference, had both fields remained untouched;" and I add, also, with equal truth, in his own words, "but in a way somewhat *different* from what the author has supposed." To the Mid-Lothian Coalmaster the difference would truly be *very* striking; for he would hail the change, could it by any means take place, with the sincerest gratulations. So effectually, indeed, would it operate on our present controversy, that neither the Canal, nor the argument, could probably have existence.

BUT, it seems, it is "begging the question to say, that the Edinburgh coalery is exhausted." If this be so, let me just ask the author, why, if he seriously doubts the fact, does he actually concede it in the outset, by stating this coalery to require, first, a steam-engine with a working-barrel of $12\frac{1}{2}$ inches diameter; and, secondly, an expenditure of no less than seven thousand pounds, for its various machinery, and the construction of its works? Has he forgot, that a
working-

working-barrel of $12\frac{1}{2}$ inches diameter will, at a six feet stroke of the engine, draw 33.8, and, at a 14 feet stroke, 473.2 gallons of water in a minute * ; and that the difficulties attending any sinkings must be very great, where such an engine is requisite? But even such an engine is by no means sufficient for the Mid-Lothian coaleries, that at Polton, for instance, requiring *two* working barrels, one of them of 12, and the other of 9 inches diameter.

AGAIN ; No one ever dreamed, far less asserted, that the Edinburgh coaleries were absolutely exhausted, but, merely in a *comparative* point of view, when opposed to those of Lanerkshire. The value of every possession must fairly be esteemed as relative, not absolute ; necessarily bearing reference, either to the greatest possible amount, or, as the case may be, to its own original condition. We have above admitted, and I think pretty liberally, that the coal with-

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* See Curr's Coal-Viewer's and Engine-Builder's Practical Companion p. 78, &c.

in six miles of Edinburgh might still last for 500 years : But it is sufficiently plain, from the difficulty of working, (an evil which, after a certain period, must continually increase) that, as the commodity cannot be afforded, even now, to the consumer, under four times the price of the west, so the metropolis must infinitely benefit, by procuring its fuel from an entire, instead of a long-worked coal-country, even by a water-carriage of 25, or 30 miles in length*.

BUT

* This is, without doubt, taking the calculation in the most *unfavourable* way, by supposing that no coals could be got, for the Edinburgh market, nearer than the *heart* of the eastern Lanerkshire districts. But whoever inspects the Report of Messrs Busbys, will perceive, what an ample tract of coal-country there exists, *within 12 miles of the capital* ; and how advantageously the wants of the east might be supplied, with even less than *two years* of expence and labour, supposing the Canal was never to be continued so far to the westward as the Shotts Hills.—Let the reader observe, that this can be boasted of, in no other line for the navigation, excepting that by Batten-Moss.

BUT there is one part of our author's statement, which is either contradictory to all common distinctions between profit and loss, or, it requires a perspicacity far superior to mine, in any wise to comprehend it. The cost of the Mid-Lothian coalery is computed at L. 7000; that of the Lanerkshire, at one-fourth part of the sum; although, probably, an eighth or a tenth part would have been far nearer the truth. "But that (says our author) is of no consequence in the present calculation, as the expence of the Edinburghshire coalery is already incurred;" and yet it is a calculation expressly instituted for the purpose of comparing them. Let us apply this reasoning to any other commercial adventure, and see what will follow.

I SAY, for example, to a friend in Leith, Sir, you have fitted out a vessel for the Spanish, or the Portugal trade, at the expence of L. 7000; and I am about to fit out another, which, from certain local advantages I possess, will cost me only from L. 700 to L. 900, or (since
our

our Coalmaſter will have it) even L. 1750, and yet ſhall be competent to ſupply the ſame market, and alſo to transport the ſame value of cargo. Unless, therefore, I be abſolutely unable to lay out the money, it is probable that I ſhall trade, *ceteris paribus*, to four times your advantage. But, ſays the merchant, (who is, we ſhall ſuppoſe, a pupil of the New School for adventure) “ That is of no conſequence in “ the preſent calculation.” You, who have your caſh ſtill in your pocket, muſt indeed count the intereſt, and it is right you ſhould compare it with the expected profits of your trade : But with thoſe once embarked, a return for their money, however it be laid out, can never be ſuppoſed to come into the account. Should it, notwithſtanding, appear, that, over and above all original expenditure, I alſo, from the ſame peculiar circumſtances, incur a far leſs expence for loading, navigating, or inſurance than my friend, it will be nothing wonderful, if, with advantages ſo complicated, and ſo deciſive a ſuperiority, my fruit, or my wine ſhould come greatly cheaper in the market.

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To such an example, I know, it will be objected, that the situation of the merchant and the coalmaster are somewhat different; because, should the former be induced to abandon the trade, his vessel and his warehouse would probably bring their value; whereas, the expenditure of the latter must be regarded as sunk, and, of course, irrecoverable. To this it may be answered, that, although the expence of shafts and levels may be in that particular predicament, yet the colliers' houses and the machinery, the heaviest articles, could never be lost. In a populous and manufacturing country, the one might always be converted to excellent account; and the other could be disposed of, to more prosperous adventurers. Upon the whole, I apprehend, it is a fair parallel: And, as the Merchants of Leith are good casuists, and not a little interested in the present controversy, I beg leave to recommend it to their candid consideration.

To proceed with the author's statement.—

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“ When

" When a very few coals (he observes) are
 " wrought, they may, perhaps, be taken out by
 " what is called a creepy, or in-going eye, or
 " with a windlass; and, perhaps, much water,
 " and other trouble may be avoided: But, when
 " it is necessary to put out 40,000 cart-loads, a
 " very material alteration will be found, even
 " during the time the workings continue at 10
 " fathoms deep *." For the acknowledgement
 contained in the former part of this quotation,
 the coal-owners of Lanerkshire are certainly
 indebted to him; although he very prudently
 qualifies it with " a perhaps," and confines its
 utility to cases where " a very few coals only
 " are wrought." From what has been said
 above, on the comparative merits of deep and
 shallow sinkings, it will clearly have appeared,
 to the intelligent reader, that from the latter
 the same moderate prices, in as far as facility
 of working is concerned, must continue with
 an extensive, no less than with an inconsider-
 able demand: And as, in every department,
 the *larger* the scale of business, the *cheaper*
 the

* See Observations p. 14.

the article can be furnished, so it would be unreasonable to suppose, that that principle should not operate, with at least equal force, in the one case, as in the other.

SINCE our author is fond of "practical examples," let him go to the works of Cleland, and he will there see more than 50,000 cart-loads put out from "in-going eyes and windlass pits," the latter not exceeding 10, and 15 fathoms in deepness. Or, should that be too troublesome, he may enjoy a view, near the 32d mile stone between Hamilton and Edinburgh, and that, too, within a few yards of the road, of a single pit, belonging to the same works, of only 7 fathoms deep, from which more than 10,000 cart-loads are yearly put out, and sold at 1 s. 6d. per cart-load, with an ample profit to both the coalmaster and the owner. All this, he will observe, is only to be found in the *eastern* part of what he very properly terms my "fortunate inclosure." Here the coalmaster has no 50 fathom sinkings to encounter; no expensive steam-engine to provide, in order to draw the water from an hundred yards deep;

nor does it cost him, as has been stated for Mid-Lothian, L. 7000 Sterling, before he can open his business, or put his machinery in motion. For the sinking of his seven fathom pit he pays seven pounds, or the thousandth part of the sum above mentioned. To level it from the adjoining rivulet costs him fifteen pounds; and for windlafs, buckets, and other inconsiderable articles, about five more: So that, for a sum not exceeding L. 27 Sterling, he is completely ready to meet the market. Let it likewise not be forgotten, that, instead of a 3 feet seam, he finds one of no less than 10 feet in thickness; which, on account of the "backs" that uniformly divide it*, he works with the regularity, and can raise almost like the masses, of a huge free-stone rock.

So much for the former part of this paragraph from our author. The conclusion is so curious and extraordinary in itself, as to be particularly deserving the notice of any professional reader who may examine the controversy: "Shallow pits (he says) are not less liable to water,

“ water, dykes, and other troubles, than deep
 “ ones ; nor are mines, oncoft, &c. lefs neces-
 “ fary in the one, than in the other : All the
 “ difference is drawing the water and coals 50
 “ fathoms deep, in place of 10, the relative ad-
 “ vantages of which I fhall endeavour to cal-
 “ culate.*” Great as we have had caufe to
 think our author’s affurance and self-poffeffion
 to be, we really did imagine, that it furpaffed
 all power of the human face, to advance fuch a
 propofition with any degree of ferioufnefs ;
 and, yet, it is to men of fcience, and to *coalmaf-*
ters that he actually appeals ! On perufing the
 paffage, who would not conclude, either that
 the book is not the production of a *real* Coal-
 mafter, as the writer profefles to be ; or elfe
 that he makes assertions, which it is utterly
 impoffible for himfelf to believe ?

THERE, no doubt, is a confiderable diffe-
 rence in drawing the water, and the coals from
 50 fathoms deep, inftead of 10 ; but that is a
 small

* See Observations p. 14.

small part, indeed, of the superior advantages of shallow over deep pits. Why this article is speciously selected from among so many, it is not difficult to discover. It is well known to be the one, on which the improvements of machinery have produced the greatest effect, and on which, therefore, by the advocates of the good "Old School," the least fires can be laid.

WERE I called upon to name the advantage of all others the greatest, exclusive of the sinking itself, which is possessed by shallow over deep pits, I should say, that it was the being obliged to trail, bear, or otherwise convey the coals but a very short way to the bottom of the pit. If the roof be good, the work is to be performed perhaps about 40 or 50 fathoms each way; and, if otherwise, not more than 20 or 30, as the case may be. At all events, a new pit may at any time be put down, for a very few pounds of expence. But no sooner do the sinkings increase to 50 fathoms, (that is, to what is assumed as the medium depth of the Mid-Lothian district) than five or six-fold becomes a very moderate ratio, at which to estimate the expence

pence that unavoidably ensues. Should the roof be tolerable, about 200 yards, on the line of bearing, as we have already said, may each way be worked: But, whether it be good or bad, the lesser will, at all times, be chosen instead of the greater evil, the expence of a long under-ground conveyance, instead of the heavier labour of sinking a fresh pit. How oppressive the oncost and other charges may here come to be, for the last 80 or 100 yards, I need not tell any coalmaster; not to mention, that the workmen often are thrown wholly idle, by the sudden falls, and mouldering of the roof. "If any one wishes for practical conviction, let him go to" the coaleries within six miles of Edinburgh, "and learn." In that happy district, he will see all the disadvantages of deep sinkings clearly illustrated; and from thence he will be convinced that the true causes proceed, of the uniform dearness, and frequent deficiency of fuel, during an Edinburgh winter.

Why, then, demands the Observer, if my arguments be irrelevant, has the price of coals,

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on the Monkland Canal, risen with the sales? And what reason is there to think, that the proprietors of the Triangle can manage it better, and prevent such an increase?

To these questions the answer is easy. In regard to the First point, the limited possessions of the proprietors of the Monkland Canal, or, at least, of those parts they have worked for that navigation, furnish no standard for judging of the Linlithgowshire coal-district, and the still greater extent of the whole Lanerkshire Triangle*. When those gentlemen undertook to send coals to Glasgow, they had probably no design to reduce, but merely to take advantage of the price of the market; and, in the first years of their business, while their sinkings were shallow, all impartial men will admit, that the coal must

* Because the most valuable parts of the Monkland coal-country are comprehended in the Triangle, notwithstanding the incorrectness of the author, who constantly represents them as *separate* districts. This will afterwards be more particularly mentioned.

must have been worked at greatly less than their present expence. As to the Second point, the means to be adopted by the proprietors of the Triangle to keep their prices moderate ; independent of a perpetual competition, (which must inevitably take place, whether they will, or will not) those means would be pretty nearly the same, as have already been adopted by the proprietors of Mid-Lothian for about two centuries past, viz. having recourse to such parts of an extensive coal-field as are level-free, and on that account most easily worked ; but with this eminent superiority on the side of the former, that they would be enabled to unite, with their own local advantages, all the ingenuity and improvements of modern art.

“ THE extremities of the coal-trade, (the “ author observes) like most other things, approach each other *.” The cheapest coals, he says, will, therefore, be found, either where the demand is trifling, and the expences small,

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or

* Observations p. 15.

or where the demand is immense, and the outlay of capital great in proportion.

It must be confessed, that the remark is ingenious, and among the best in his book ; but, unluckily, it involves conditions, which, how founded soever in some cases, are irrelevant in others, and, in regard to the present argument, are wholly inadmissible. In a particular manner, the example of the Triangle may be adduced to controvert it. In some parts of this "fortunate inclosure," both the demand and the output are great, yet the expence is singularly small ; so small, that it is believed to be without a parallel in Britain. At Cleland, as we have already stated, the proprietor puts out yearly more than 50,000 cartloads of 12 cwt. Yet the selling price is only 1s. 6d. per cartload, or 2s. 6d. per ton ; and, with a similar demand, what is afforded at Cleland, could be equally afforded in other quarters of the district. In the words of the Observer, we may venture to think, " Were the nature of the business of these " coaleries fully known to him, he would find " it considerably different from what he has " supposed

“supposed it to be.” He would then be convinced, that, unlike our rivals, (whose works, unless upon a great scale, could not subsist) our main advantage consists in this, that we are enabled to proportion the *power* exactly to the *labour*, the *outlay* to the *demand*, whatsoever these may be. The sinking of the pits, as has been shown, is extremely trifling; and levels, for the most part, carry off the water. The drawing the coals to the pit-bottom incurs little expence, because a fresh pit can so very speedily be put down; and as to extra-work below, it can scarcely be said, for the same reason, to have existence. Hence it happens, that, whether five colliers or fifty were employed, it would make no difference on our price, unless, with an extensive demand, to render it still more moderate.

IGNORANT as he is, or at least affects to be, of these obvious principles, he adduces, as an example, the Newcastle and Cumberland coaleries, for the illustration of his argument; and, I acknowledge, that, in respect to Cumberland and Newcastle, they do sufficiently illustrate it.

But, if he have satisfied himself, as I have done, by an ocular inspection of these great works, he will know, that, for many and various reasons, they can no more apply to the coaleries of Mid-Lothian, than the situation of the latter, as we have clearly demonstrated, to the Triangle of Lanerkshire. Meaning, at present, to write a moderate pamphlet, not an 8vo volume, it is impossible to digress into topics so extraneous to our purpose: But to the Coalmaster of intelligence we may just observe, as to the coal in England, that its very different texture, and the facility of working it; the situation of the surface above, and the regularity of the metals below; these are some among the causes to which I allude*. In regard to the superior

* In Cumberland, for example, about Whitehaven and Workington, the collier's price (*i. e.* the expence of "hagging" as it is called) would astonish a Scotch Coalmaster, accustomed to the far greater difficulty of mining in the north. In the former country, no more is paid, even at present, when every article of subsistence is at so extravagant a rate, than from 2d. to 2½d. per "corf," which amounts only to about 1s. 4d. on an entire waggon-load of three tons.

superior fitness of the Scotch coal for chamber fires, and its inferiority, on the other hand, to that of England for the kitchen, or for the furnace of the manufacturer, they are points fully known, and as readily admitted by the English themselves †. It is not, however, with the heavy rough-coal of the happy district in Mid-Lothian, but with the pure splint of Lanerkshire, or of the Fife-coast, that I should wish, in London, to maintain the reputation of the north.

HAVING compared the relative advantages of the coaleries in the east and west, our author next proceeds to consider the price, at which the produce of each might be furnished, in the metropolis. As it is impossible to give a better specimen of his mode of calculation, than his statement for the Canal-districts, we shall present to the reader what, in respect to that country, he calls a very fair, and even “a favourable supposition.” Admitting, he says, the Lanerkshire coalmaster to put out 40,000
 cart-

† See Beaumont on the Coal Trade *passim*.

cart-loads as cheap as he now does one, or two
thousand, " his price will then be, per cart of
" 12 cwt., and which, as no particulars are
" given, I must understand to be the cost, and
" very cheap it is at that, . L. 0 1 6

" To make great coals, one-third
" more must be put out, . 0 0 6

" Expence of carriage, &c. as sta-
" ted by the author, per ton 4s.

" 6d.; per cart, nearly, . 0 2 9

L. 0 4 9

" To deliver 1200 cwt. (I suppose
" 12 cwt.) of large coals at Edin-
" burgh, will unquestionably re-
" quire 1350 to be shipped; but
" say one-tenth, which must be
" taken on two-thirds of the a-
" bove, say 0 0 3

" To carriage from the end of the
" Canal to the place of consump-
" tion, which had been omitted,
" but has afterwards been recti-
" fied, and stated at 1s. per ton;

" but,

Brought forward L. 0 5 0

“ but, every thing confidered, at

“ the average diftance of Edin-

“ burgh and the fuburbs, it may

“ fairly be taken at that fum per

“ cart-load, 0 1 0

“ Price of Lanerkfhire coals,

“ upon the moft *favourable*

“ fuppoftion*, L. 0 6 0

Now, it is not a little curious to obferve, that, of the five articles which compofe the above calculation, no fewer than three are ftangely miftated. The great-coal in the Canal diftricts being ufually fold together with the chows, at $1\frac{1}{2}$ d. per cwt., or 1 s. 6 d. per cart-load, it is wholly erroneous, in order to make great-coal, that one-third more of this average price fhould have been taken, but the *difference* only between the value of the great-coal, and the entire average rate, The average rate,

* Obfervations pp. 18. 19.

rate, as he has fairly stated it, is, indeed, 1 s. 6d.; but the price of the great-coal, (which composes two-thirds of the quantity), if separately sold, would bring 1 s. 8½ d., and that of the chows, (which make up the other third) is 1 s. 1½ d. per cart-load. Consequently, to make great-coal, 2½ d., and not 6 d. should have been added to the first mentioned sum. Whoever will take the trouble to try the same method by the prices in Mid-Lothian, will find that it answers with entire accuracy, although the custom of separating the coal into different kinds prevails in the eastern, and not in the western parts of the country, and may seem, at first sight, to occasion some embarrassment *.

SECONDLY,

* The statement of the prices in both districts, when taken in the same fair and equal manner, will stand as follows.

MID-LOTHIAN.

Price of the great-coal (being two-thirds of the whole) is,			
Per cwt., . . .	4½ d.,	per cartload 4s. 6d.,	per ton 7s. 6d.
Do. of chows (⅓ d) is	3	— — — 3 0	— — — 5 0
Average Do. is . . .	4	— — — 4 0	— — — 6 8

Therefore,

SECONDLY, I cannot admit that $1\frac{1}{2}$ cwt. should be reckoned for the article of breakage alone, as stated by the Observer, and that it will require $13\frac{1}{2}$ cwt. to be shipped, for the purpose of delivering 12 cwt. at Edinburgh. In such cases, there is nothing like an appeal to experience. On investigation, I find, that, at the Coats coalery, on the Monkland Canal,

N it

Therefore, since the average price of the whole coal is 4d. per cwt., and the Edinburgh cart-load of 12 cwt. amounts to 4s. od.

In order to make great-coal, $\frac{1}{2}$ d. per cwt. must be added on 12 cwt., that is, the difference between $4\frac{1}{2}$ d. and 4d. as above, 0 6

Thus, the price of the Edinburgh cart-load of great-coal, in Mid-Lothian; is 4s. 6d.

LANERKSHIRE.

Price of the great-coal (being two-thirds of the whole) is as follows ;

Per cwt. $1\frac{1}{8}$ d.	per cartload 1s. $8\frac{4}{8}$ d.	per ton 2s. $9\frac{1}{8}$ d.
Do. of chows ($\frac{1}{3}$ d) is $1\frac{2}{8}$	— I $1\frac{8}{8}$	— I $10\frac{8}{8}$
Average Do. is . . . $1\frac{9}{8}$	— I 6	— 2 6

Therefore,

it takes just 22 cwt. to sell 20, (that is, the clear loss of an 11th part) after the commodity has been not only boated and unloaded, but also exposed to the weather. It is a fact well known to every one acquainted with the subject, that the principal loss, sustained in the transporting of coal, arises from the last mentioned cause: And, I believe, the Messrs Busbys will attest, that, whether for resisting the weather, or enduring fatigue, there are perhaps no coals in the

Therefore, since the average price of the whole coal is $1\frac{8}{16}$ d. per cwt., and the Edinburgh cart-load of 12 cwt. amounts to 1s. 6d.

In order to make great-coal, $\frac{3}{16}$ d. per cwt. must be added on 12 cwt., that is, the difference between $1\frac{11}{16}$ d. and $1\frac{8}{16}$ d., as above, 0 2 $\frac{4}{16}$

Thus, the price of the Edinburgh cartload of great-coal, in Lanerkshire, is 1s. 8 $\frac{4}{16}$ d.

THERE is one circumstance, connected with this statement, which our author either wilfully, or perhaps ignorantly conceals, viz. that the chows in Mid-Lothian, or the better part of

the island superior, and few, indeed, equal, to those of the Lanerkshire Triangle.

THIRDLY, I had allotted, and I thought pretty largely, 1 s. per ton, or about 7 d. per cart-load, for carriage from the Canal to the dwellings of the inhabitants; and, beyond question, even with the present extent of the metropolis, such a rate will be admitted to be fully equal to the purpose. This our consistent author at once nearly doubles, calculating it no less than 1 s. per cart-load: And yet he is the very person, who, in another part of his book, (as will hereafter appear) ingeniously shows, as “a consolation” to his employers, that the

N 2 same

of them, not only supply the country-sale about Edinburgh, with uncommon advantage to the owners, but many of them are likewise disposed of in town, at a price little inferior to the great-coal itself. They are, in fact, well known to be equally good in quality; and the labour, by which the great-coal must be broken down for use, is by this means saved to the purchaser. The chows of Lanerkshire, instead of being lost, as is unfairly implied by the author's hypothesis, would, of course, be disposed of in a similar manner, as well in the east, as in the west.

same quantity of coals may be conveyed, without difficulty, for something less than 1s. 2^d., from the Edinburgh coaleries * ! Reader, the distance from the banks of the Navigation to the dwellings of the consumers, cannot be computed above *a mile*: From the coaleries in question to the city, it measures *six*; and, in the delivery by land-carriage, the carters have to travel this same mile over and above.

As I regret the frequent occasion I have had to charge my opponent with a want of candour in his statements, so I feel the more desirous to set an example of an opposite conduct in my own. I, therefore, readily acknowledge, that, in the calculation of the price of the Lanerkshire coal in my pamphlet, I had certainly committed two errors. 1st, In estimating the cost of conveyance to the banks of the Canal, I had over-rated it, by the one-half at least, at 1s. 4d. per ton: And, 2^{dly}, As to the loss which must be occasioned by breakage and shrinkage, I had inadvertently omitted it altogether. Although, as it happens, these

* Accurately 2s. 2^d.—See Observations pp. 26. 27.

these inaccuracies will be found little to affect the ultimate amount, yet I shall beg leave, in this place, not only to correct them, but likewise to reduce to some degree of probability, what seem to me to be, at least, equal inadvertencies, (to call them no worse) in our author's statement,

Average hill-price in Lanerkshire,
per cart-load of 12 cwt. L. 0 1 6

To make great-coals for the Edinburgh market, $2\frac{1}{4}$ d., as already mentioned, must be added, 0 0 2 $\frac{1}{4}$

Expence of freight, tonnage, &c. as stated in my book, 4s. 6d. per ton, or 2s. $8\frac{4}{10}$ d. per cart-load; from which deduct 8d. per ton, or $4\frac{8}{10}$ d. per cart-load, over-rated as above, for conveyance to the banks of the navigation, and there will remain for 12 cwt.,

nearly 0 2 4

L. 0 4 0 $\frac{1}{4}$

To deliver 12 cwt. of large coals

in

Brought forward L. 0 4 0 $\frac{1}{2}$
 nine Edinburgh, will unquestion-
 ably not require 1350 to be ship-
 ped: But, for breakage and
 shrinkage, both during the voy-
 age, and after lying exposed to
 the weather on the coal-wharf,
 $\frac{1}{10}$ th may be reckoned, as on the
 Monkland Canal; which, upon
 the above, is about . . . 0 0 4 $\frac{1}{2}$
 Carriage, from the banks of the
 Canal to the habitations of the
 consumers, at 1s. per ton, a-
 mounts, per cart-load, to . . . 0 0 7 $\frac{3}{4}$;

So that the real price of the
 Lanerkshire coals, per cart-
 load, when delivered in E-
 dinburgh, will be . . . L. 0 5 0 $\frac{1}{8}$

That is, only 4s. 3d., as delivered from the
 Canal-boats, and 5s. from the coal-yards, or
 coal-wharfs. Now, if the reader will take
 the trouble to turn to pp. 17. and 85. of my
 pamphlet,

pamphlet, he will perceive, that, by the first calculation, although the articles are put somewhat differently, yet the general result is not greatly dissimilar; as 8s. per ton will make 4s. 9½d. per Edinburgh cart-load, and not 6s., as most industriously discovered by the author. Were I as desirous to *undervalue*, as he seems to *exaggerate* the price of the Lanerkshire coals, I could, with sufficient justice, have still further reduced some of the above mentioned articles; first, because it is found, (as already stated) that a considerable part of the small coal is, equally with the great, adapted to the sale of Edinburgh; and, secondly, because 8d. per ton is still a rate perhaps more high, than is elsewhere warranted by practice, for transporting the commodity to the banks of the navigation*. But, in so *general* a view,

not

* Much has, of late years, been done in England towards bringing Rail-roads to perfection; and, in fact, they are found, notwithstanding the immoderate expence of constructing them, to be attended with great benefit to the proprietor, for articles, like coal, that are coarse and cumbersome, if but for a short distance, and on a tolerably level surface.

These

not a minute prospectus, of a great undertaking, I own I was anxious, that all statements of expence should rather exceed, than fall below the truth ;

These rail-roads, on the most improved plan, are made of cast-iron, and are laid with a descent, from the coal-pit to the Canal, of $\frac{1}{4}$ th of an inch in a yard, and sometimes even $\frac{1}{2}$ d of an inch ; and, with such a declivity, it is found, that a stout horse will draw from 15 to 20 tons down the road, and fetch back the empty waggon. There was an experiment tried, some time since, at Mr Wilkes's coal-works, at Brinsley near Nottingham, on a rail-road which had a declivity of $\frac{1}{2}$ d of an inch in a yard ; and here, a single horse actually drew the enormous load of 47 tons, including the weight of the waggon, down the road, and 8 tons, including the weight of the waggon also, back again.

Without doubt, such examples are curious ; but they will, by no manner of means, apply to the conveyance of coal, in a district from 8 to 10 miles, at least, each way, and over a surface as uneven as any in the kingdom. Yet, *such* a land-carriage would be to be undertaken, in order fully to supply the North line of navigation from the *cheapest* Lanerkshire districts, and even the Batten-Moss line itself, were the level branch only, from Carfin to the bottom of Gairongill, to be adopted ; not to mention the 64 miles, which, on the

truth ; and whatever contingencies might arise in the course of the execution, that no material disappointment should occur, whether to

the

the former track, the coal would *afterwards* have to navigate, before it reached Edinburgh *. By the Batten-Moss line, it is true, this formidable objection is wholly removed, both from the judicious direction of the Canal itself, and of the level-branch from Cleland to Gairon-gill, as many important works would thereby be brought pretty near to the banks of the navigation. Still, for a coal-field so extensive as that from Carfin eastward, I cannot take the expence of conveyance to the Canal, in general, under 8d. per ton, as I have stated it in the text. I know that, on this subject, I differ from several persons of great judgment and experience : But, I hope, they will attribute the error (if an error it be) to the real cause, a desire of holding out *no fictitious hopes* to the public, and remember, how greatly it must strengthen my main proposition, viz. *the absolute certainty with which Lanerkshire, by water-carriage, not only could contend with, but completely undersell, the great coaleries of the east.*

* By this means, the Lanerkshire coals would never reach Edinburgh at all; but, by navigating only one half the distance, they would find a market in Stirlingshire, in the very track of the *North line*, where the article is confessedly dearer, than in Mid-Lothian itself. See this fully explained in my former Pamphlet p. 118.

the expectations of the subscribers, or to those of the public.

FINDING it, in this manner, impossible by any art to bring the cost of our coal to a level with the Edinburgh prices, our Observer is yet unwilling to abandon his object. He has still another argument in store for us; and by this he is resolved to crush our hopes at once, when we thought we had finished our career, and successfully navigated with our cargo to the capital. "There is no instance, (he says*) in any place, of a constant and immediate sale for coal; and therefore, wherever the Canal terminates, there must be a Coal-yard prepared for keeping a stock of coals." Having declared, that this intended termination must be in "the most valuable grounds of the New Town," he institutes a calculation to ascertain the expence of purchasing the land, and establishing the coal-yard;—to the end that the good inhabitants of Edinburgh

* Observations p. 19.

burgh might, during the winter, sleep quietly in their beds, with a moral certainty of not "being frozen to death" for want of fuel; a calamity, which, he thinks, might otherwise befall them.

WHEN I proposed a Navigable Canal as the means on which the metropolis should chiefly depend for its coal, I was fully aware, that there were many towns in England, such as Manchester, Birmingham, Liverpool, Nottingham, Newark, Leicester, &c. in the same manner supplied by water-carriage. In visiting most of these, a few years ago, I universally understood, that they considered Inland Navigation, for the above purpose, as the first of blessings; and I have not since learnt, that their population has been thinned, or their commerce suspended, from the horrible apprehension of being frozen to an icicle. Manchester receives its coal by the Bolton, Ashton, and Bridgewater Canals; and Birmingham, principally, by the navigation of that name, together with a very small quantity,

which, on account of the extraordinary cheapness of the article at some pits, is enabled to come by land-carriage. There, excepting in time of frost, the coals are purchased, by the inhabitants, immediately from the Canal-boats: In the summer, care is taken to lay in a sufficient stock upon the wharfs, to provide against the accident of the navigation being frozen up in the winter; and it is not found, during that season, that the price is much enhanced, by the inevitable adoption of such a measure.

THINKING, on this account, that the same obvious method of enjoying uninterrupted flumbers, and averting the misfortune of being "frozen to death," as was adopted in other quarters, would not be overlooked by the capital of Scotland, I own I bestowed but little attention on this part of the subject. I mentioned, indeed, the use of ice-boats, which, both in England and Scotland, are found extremely beneficial; and I hinted, that coal-yards, or wharfs, should also be established. It was said, at the same time, that, should the
winter-

winter-stock prove insufficient, (a thing, however, not likely to happen) still the fides of the Forth, and the whole of the Fife-coast were at hand; from whence coal might be had, including land-carriage from Leith, at 14s. per ton; which, with permission of our author and "the Schoolmaster" his classical friend, is no more than about *fourpence three farthings per cart-load dearer* than the present selling price in Edinburgh. To this I might further, with great propriety, have added, that such works as should subsist after the completion of the Canal, even within six miles of Edinburgh, although useless with respect to the ordinary supply of the city, might be resorted to on occasion: And these, for the consumption of Musselburgh and Dalkeith, as well as a most populous country, would always be sure of considerable employment.

AMIDST these harmless speculations, I did imagine, that the proprietors of Lanerkshire might have had the privilege of constructing their own repositories, or coal-wharfs, where-
 ever

ever they thought fit: Nay, I had even begun, in idea, to project a commodious situation to the westward of the city, which seemed well adapted to so useful a purpose: When unexpectedly the Observer, not content with forcing me, *nolens volens*, to annihilate the coaleseries of Glasgow, shuts up the navigation with ice, for no less than four winter months together. This done, he lays out two spacious coal-yards, of which one alone is to contain at least 125,000 cart-loads, for the use of the metropolis, during that inclement period. As their site, we are told, is in "the most valuable grounds adjoining to the New Town," they might be intended, I suppose, to improve the prospect from Prince's Street; or they might judiciously fill up the vacant space still left for the completion of Charlotte Square. Having reckoned the value of the ground, at the moderate rate of 10s. 6d. per yard; having calculated the height of the walls, and the expence of the buildings, he presents to the Subscribers a clear estimate of the whole, amounting to upwards of L. 43,000 Sterling. And now,

now, Gentlemen, he tells us, you have this plain alternative : Either resolve to lay out the money at once, which will not improve your profits ; or you subject your new customers to a loss, upon the Fife-coals, of only L. 10,000 a-year less than the whole saving to be made, by your far-famed navigation *.

By the impartial reader, I believe, it will be allowed, that these proceedings, how ingenious soever, are somewhat arbitrary : And since our author is resolved to subdue me, at all events, by dint of calculation, this is taking, at least, a short cut to his object. But, it seems, he is an “ unlettered Coalmaster,” acquainted only with his trade, and may therefore reason, or calculate, beyond all common laws of calculation or argument. Now, were I permitted,

* See Observations pp. 21. 22.—This result, I suppose, is to be discovered only by the author's *new* school for calculation ; according to the practice of which the supply from Fife, instead of being compared with the price in Mid-Lothian, viz. 13s. 4d. per ton, is opposed to that of Lanerkshire at 7s., with which it has no sort of connection.

on the part of the Lanerkshire proprietors, perhaps I could provide them with coal-wharfs somewhat less expensive than these, without either giving alarm to the inhabitants of Prince's Street, or disturbing the manes of the elegant architect of the adjoining square.

Not far from Kirkbraehead, it is possible that a commodious situation might be discovered: Or, if nothing less than "twelve acres of ground" will fill the capacious mind of our Observer, I can inform him, in regard to the real value of such a space, that, to the northward of Queen's Street, and pretty near the track of the intended navigation, no less than about $13\frac{1}{2}$ acres of ground were, in the month of June last, sold by public auction for L. 3500 Sterling, and the payment of a moderate feu-duty to Heriot's Hospital. At such wharfs, as is elsewhere the practice, all orders would be received, and all demands answered; and the cargoes, not immediately sold off from the boats, or destined for foreign exportation, would,

would, of course, be laid up as a provision for the winter.

How long the navigation might, in any season, be interrupted by ice, it is not easy to say. By a letter now before me, from a gentleman who has resided on the banks of the Duke of Bridgewater's Canal, ever since its construction*, it appears, that it never was known to be frozen up above *three weeks* together; a circumstance partly to be attributed, he says, to the use of Ice-boats, (a practice which the Observer will not allow even "seriously to be talked of;") and partly to the navigation itself being unimpeded with lockage. For the Canal of Edinburgh, then, probably six weeks, and not three and four months, may be taken as a fair allowance for interruption; and that period, I presume, will be found beyond the mark, were an average of years to be taken to ascertain it. Yet there is surely no reason, in case of accidents, why a three

P month's

* Andrew Patten, Esq.

month's stock should not be deposited on the coal-wharfs. The loss that would ensue, would be very inconsiderable, as from the experience of existing Canals has been sufficiently demonstrated: And hence it clearly appears, that 5s. per 12 cwt. is the highest rate, to which, even in the winter season, the coal from the Canal-districts could possibly amount, and no less than 3s. under the present rate, during the same season, in the Edinburgh market. But let it always be remembered, that, on some occasions, no less than 15, and even 20s. have been paid; the natural consequence of an exclusive monopoly remaining long in the hands of a few individuals.

Thus, I have endeavoured, at some length, to illustrate and simplify the leading points of an intricate, and professional argument. From the reasonings which have been offered, I trust it will be apparent, and that to the satisfaction of every reader of impartiality, that our author's FIRST PROPOSITION, as we stated it in the outset, concerning the endurance and price

price of the Lanerkshire coals, is most completely refuted. Let us now examine what may be termed his SECOND, and see whether it be found more solid in its structure, or more just in its conclusions.

Its object is to shew, "That the city of Edinburgh, supplied as it now is with fuel, lies entirely at the mercy of the coal-masters of Mid-Lothian; such being the superior advantages which those gentlemen possess, and such their extraordinary power to counteract competition, that whosoever shall attempt it, must commit the proverbial folly of 'bringing coals to Newcastle,' and, of course, fail in his enterprize."

It has been sometimes observed, that what a man wishes he very readily believes; and, whether he believe or not, he will frequently maintain, in the face of reason and probability. Without doubt, it is the nature of controversy, especially when complicated with interest, to produce on the controvertist very extraordinary effects, in enhancing the force of his

own, or displaying the weakness of his adversary's arguments. Under such impressions, when necessity impels him to make an attack upon the strong-holds of the latter, it but too naturally happens, that the works, which by an unprejudiced assailant would have been abandoned as impregnable, should seem to yield to his vigour, and even vanish at his approach.

How far my own reasonings have been biassed, or my confidence augmented, by this natural propensity, I shall not venture to determine: Neither will I pronounce as to its actual influence on the doughty champion of the Mid-Lothian mines. But, concerning his theory, in order that the reader may judge for himself, I shall lay before him the method, which is adopted, to display what are significantly called the "dormant advantages" of his favourite district, and to prove that it is, indeed, the "Newcastle" of the North.

We have already taken a view of the arts by which, our Observer has magnified the supposed

supposed price of the coals of Lanerkshire, and we have seen, that, even according to his own exaggerated statement, they might still be furnished at 6s. per cart-load, or 2s. below the existing Edinburgh rate. By his present Proposition, it is now meant to shew, how greatly under that sum a like quantity could be afforded, from the coaleries in the vicinity of the capital. But first he thinks it right to sooth his good friends the citizens of Edinburgh; and this he does with his usual facetiousness and ingenuity.

THE Lanerkshire scheme, he had all along assured them, was a deceitful speculation, promising what it could not perform, and boasting what it did not possess. In summer, it was evident that this peerless Canal might very possibly break out; in winter, it would most certainly be frozen up: And, after yielding to the delusion, says he, if with “frost-bitten toes, and undressed dinners, they cast a wishful, and famished look to the east,” who have they, as a refuge, but “the Hopes,
“ the

“the Wauchopes, and the Clerks,” in that inclement season? But those gentlemen, he tells them, still feel that they are “their native Coalmasters, who, in every point of view, are naturally connected with their prosperity, and interested in their happiness, and will yet be able to secure them against such predicaments as these *.”

THE scheme by which he proposes that these blessings are to be dispensed, and the Mid-Lothian prices reduced to moderation, is particularly directed to two objects, 1st, The drawing the coal from the bottom of the pit; and, 2dly, The manner of its transportation to the market; and on both branches he holds forth important amendments.

IN regard to the FIRST, taking his calculation from a coalery yielding L. 3000 a-year, and of which the out-put is 40,000 cart-loads of 12 cwt., obtained from pits of 50 fathoms deep; that, he says, “cannot require less than

“ten

* Observations pp. 22, 23.

“ ten horses, and, probably, at two pits. The
 “ original price of these, with that of the gins,
 “ cannot be reckoned under L. 200. A machine
 “ will do this work at one pit, and may be
 “ kept by the same number of men, that are
 “ necessary for the horses; may be erected at
 “ from L. 250, to L. 300; and, certainly, all
 “ the other annual charges will not amount to
 “ L. 100. Ten horses, in moderate times, can-
 “ not be kept for less than L. 36 each; conse-
 “ quently a saving of at least L. 260 *.”

AGAINST such an improvement, I apprehend,
 there lies a material objection. Since, by his hy-
 pothesis, the whole 40,000 cart-loads are to be
 put out from one pit only, the Observer will al-
 low me, that, for this business, from 50 to 60 col-
 liers, at least, would be requisite. If but one
 seam of 3, or $3\frac{1}{2}$ feet in thickness be supposed,
 the pit could not last above eight months. With
 two seams, it would be prudent to change it in
 about sixteen: And, even if three such be ad-
 mitted, (which, for the district in question, is a
 most

* Observations p. 24.

most ample allowance of coal) about two years would be the utmost length of time, that could be computed for the duration of the pit. I will, therefore, leave it to himself, or his professional friends to calculate, whether the inevitable expence of so often shifting the machine, as probably, on an average, once in sixteen months, would not go near to overbalance the supposed advantage which the improvement was to yield?

ON the other hand, if we admit the scheme to be altogether as feasible as he would wish to represent it, I presume, that, at least, for the present, he has done vast injustice to the cause, by underrating the profit. During a year like the last, or such as the current one unhappily promises to turn out, the expence of horses' maintenance cannot well be reckoned at less than *twice* the usual rate. Thus, then, the saving, which would accrue, to each coalery, by the machine, instead of L. 260, would, at this moment, amount to no less than L. 620 a-year, that is, almost 4d. on each cart-load; a sum which

which the generous owner, (as there is yet no Canal to distress him) could either put into his pocket, or remit to the consumers, whichever he thought fit.

Now, I would ask our author (if he means we should believe that his improvement is practicable) why, in the name of common sense, has it never been adopted? What! is not there, in all Mid-Lothian, *one* man to be found, who will expend "from L.250 to L.300" of capital, in order to get a certain return of L.620 a-year, or even of L.260? Will our "unlettered Coalmaster" himself, who has so meritoriously pointed out the scheme, reject a profit of more than 90 *per cent.* in the one case, and more than 200 in the other, and, like his employers, continue in so sluggish an apathy? And yet, in speaking of Lanerkshire, (where I should almost suppose he had never been) he affects to wonder at the unequalled indolence, and unadventurous spirit of its eastern coal-owners. After no less kindly, than ingeniously computing our land by the "inch," our stone and wood by the "foot," and even our water

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by

by the "spoonful," he strenuously exhorts us to lay out about L. 1000, or L. 2000, in *trying* for coal (there being so extremely *little* that is known already), and this merely with the *prospect* of the Canal taking place; because, in regard to a return, says he, should the scheme ever succeed, the *whole* of your money will then not be lost *.

BUT, in arguing with men possessing so disinterested a spirit, let us quit altogether the forbidden topic of emolument or advantage, and enquire, on what principles of general *benevolence* they would decline an improvement so widely beneficial? Since all views of interest present themselves in vain, will local attachment, will motives of patriotism, have no greater influence? Have they already forgotten, that they are the "native coal-masters" of the city of Edinburgh; that they are deeply "connected" with its prosperity, and interested in its happiness, and therefore bound, by every tie, to furnish it with fuel at the cheapest possible rate?

* See Observations pp. 39. 40. 46.

rate?—But I forbear to push this argument any further. I suppose the discerning reader will, without much scruple, agree with me in concluding, that an improvement not adopted in circumstances so extraordinary, is, in plain English, no improvement at all; and that, in other places however advisable or important, it is wholly unsuitable to the coaleries in question.

Quodcunque ostendis mihi sic, incredulus odi.

THE fact is, that the winding-machine is used, with the greatest success, at Newcastle, and other English coaleries, where the pits are from 80, to 130 fathoms deep: But, with such as are found within six miles of Edinburgh, a gin and horses will probably raise the coals at far less expence. At Polton, for example, (a coalery which is managed with uncommon judgment) the coals are drawn, by contract, 42 and 43 fathoms, so low as 2½d. per ton; and, from 50 fathom pits, they could be raised, for about 3½d. or 3d. As this, comparatively, is a mere trifle in the price, not above a five-and-twentieth, or a thirtieth part of the whole cost upon the hill, it is pretty clear, that other means

than these must be devised, before it be practicable to reduce it effectually in the market.

WHY, then, it may be asked, is such a scheme as the above seriously held forth, as an important improvement, by a coalmaster like our Observer, who is far from being deficient in professional intelligence? Probably, for the same reason that his whole pamphlet was written: While it would puzzle the impartial, he thought, it might console the desponding; and it would be sure to *astonish*, and, perhaps, *go down with the ignorant*.

THE SECOND great amendment he proposes is on the mode of transportation to the market. In no part of Great Britain, we are informed, is this department of the business “carried on
“in so slovenly a manner, as in the neighbourhood of Edinburgh; as every one, who views
“the starved condition of the coal-horses and
“drivers, must be convinced of. In common
“times, their daily hire is at most 3s., out of
“which they must pay the tolls, and for which
“they drive one cart of 12 cwt. to Edinburgh,
“at

“ at the distance of six miles. Let them go to
 “ Glasgow, and they will see double the weight
 “ carried double the distance, by one horse, a
 “ little higher-priced perhaps, and somewhat
 “ better fed, but in no proportion to doing
 “ four times the work. Suppose, for instance, a
 “ coal-master in the vicinity of Edinburgh shall
 “ take this department into his own hands; if
 “ he will enquire in the neighbourhood of
 “ Glasgow, he will find, that nothing is more
 “ common, than for a single horse to draw 25
 “ cwt., three times a-day, from coaleries four
 “ miles distance. It will surely be easier to do
 “ so twice a-day, at six miles distance from E-
 “ dinburgh; because the road is, in general,
 “ leveller, and there will only be twice filling
 “ and emptying; an operation which con-
 “ sumes a great deal of time, in place of
 “ three times. Forty thousand carts *per an-*
 “ *num* correspond to something less than 800
 “ carts a-week. By the above computation, a
 “ horse should carry 24 carts per week to E-
 “ dinburgh; suppose, however, only 20. It
 “ will, in that case, require 40 horses, and 20
 “ men, to do the whole business. Suppose these,
 “ with

“ with tear and wear of horses, carts, &c.,
 “ and to make up for accidents and idle days,
 “ stated at L. 60 *per annum* each, the amount
 “ will then be L. 2400 *per annum*. But 40,000
 “ carts, at the present price of 3s. 6d. paid to
 “ carters, is L. 7000 *per annum*, and, at the
 “ common price of 2s. 6d., is L. 5000, deduct-
 “ ing a trifle for the toll; which creates a sa-
 “ ving, at once, very near equal to the full
 “ value of the coals themselves, in the inval-
 “ uable coal-district of the county of Lanerk;
 “ and a saving in the carriage of the whole
 “ quantity, very little inferior to that by the
 “ proposed Canal*.”

By this statement, then, it would appear,
 that 40,000 cart-loads, conveyed at the rate
 of L. 2400, give pretty nearly 1s. 2½d. for
 each†: And I will candidly acknowledge, and
 agree with the Observer in opinion, that, to
 the consumers, or at least to the coal-masters
 of Mid-Lothian, it would be “ a great conso-
 “ lation to know, that, by a land-carriage of
 “ six miles, they can transport their coals to
 “ market,

* See Observations pp. 24—26.

† Accurately 1s. 2⅔d.

“ market, at a less price than the freight duty
 “ alone of this boasted Drawcanfir Canal a-
 “ mounts to.” Instead, therefore, of the
 “ starved condition of the present coal-horses
 “ and coal-drivers,” would it not be a pleasing
 sight, to see the sleek and stately steeds, and the
 well-conditioned carters of “ the Hopes, the
 “ Wauchopes, and the Clerks,” covering the
 streets of the metropolis? Should the inhabi-
 tants of Edinburgh, curious to learn why a
 scheme, so interesting to themselves, and so lu-
 crative to their dear friends the coalmasters,
 has never been put in practice, perchance ask
 the question, our author has a sufficient answer,
 on the part of the latter, already prepared for
 them. “ When a moderate profit,” says he, Gen-
 tlemen, “ is made, there is little temptation or
 “ necessity“ for efforts of this kind ; but that
 “ does not make their success the less certain,
 “ when occasion requires them to be called
 “ forth *.” Which reply, for the use of the vul-
 gar being dilated a little, and thus divested of
 that discreet and cautious reserve in which it is
 enveloped, is neither more nor less than this :

DEAR

* Observations p. 26.

DEAR friends of Edinburgh, in whose happiness and prosperity we are so anxiously interested! while our present monopoly continues undisturbed, you shall pay very handsomely for your coals: But, should a competition arise, and you think seriously of leaving us for this "Drawcanfir Navigation," rather than lose your business, we wish, as a piece of friendship, to convince you, that we can deter our rivals, by *lowering our price*. At the same time, (as is soon after added) we think it fair to give you notice, that the Canal, thus confidently threatened, will never take place. From the formidable attack that a *western* friend has been careful to make upon it; from a most fortunate discovery of our "dormant advantages," for which we are indebted solely to his diligence; and, above all, from this disinterested notice we have given the subscribers of their danger, those gentlemen will indeed "act very differently from their common principles, if they venture their money, when they know it is in the power of any set of men to ruin their scheme at once, and whose interest it is immediately to do it *."

UN-

* See Observations p. 27.

UNWILLING as I am to disturb a conference so affectionate, between the city of Edinburgh and its "native coalmasters," I must yet be suffered to make a few remarks on the above notable improvement.

IN the First place, the carriage of coals, in the neighbourhood of Glasgow, is performed very little, if at all cheaper, than at Edinburgh. A waggon-load of 24 cwt., at the former place, costs 11s., that is, nearly 9s. at the pit, and 2s. more for transportation; which, as the average distance to the different coaleries is about three miles, corresponds to 2s. for a cart-load of 12 cwt., brought double the length of way to Edinburgh. This, no doubt, still leaves a difference, against the rate in the east, of 6d. per cart-load; but it is sufficiently accounted for, by the superiority of the roads in the neighbourhood of Glasgow, and other local circumstances*.

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* Our "unlettered Coalmaster," in the quotation we have above made from him, has, with his usual ingenuity, considerably

IN the Second place, I must observe, that it is utterly impossible for a horse and cart, carrying 24 cwt. of coals, to go twice a-day, from the distance of six miles from Edinburgh, or even, as the Observer supposes, to transport 20 cart-loads of the present size per week. To perform the two journeys backward and forward would take ten hours. To load at the hill, and sell in town, would require,

ably exaggerated the alacrity and prowess of the Glasgow waggons, and waggon-horses. The truth is, they do not commonly go "three times a-day to coaleries *four* miles distant." Waggons carrying 24 cwt. will go three times a day to Mr Gray's pits, or to the Green, which, I presume, are the coaleries alluded to: But the Green, I believe, is only 2 miles 890 yards, and Mr Gray's nearest pit only 2 miles 500 yards from the city, that is, from the east end of the Gallowgate. In the winter they are enabled to do this, by being filled over night, or in the morning before day-break; and also by travelling a considerable while in the dark. But, indeed, a *single-horse cart* will go *twice* a-day to Barachny, which is about five miles off, and, to Mr M'Nair's coalery, twice the one day, and three times the other. The common opinion in Glasgow is, that the greater profit is made by the waggons; but many judicious carters think decidedly otherwise, and therefore prefer the single-horse cart.

quire, at least, three more; and only one hour intermediate being allowed to feed and rest, the whole work must consume, in the most moderate view, fourteen or fifteen hours in the four-and-twenty.

WERE horses found of sufficient strength for this undertaking, it might certainly be accomplished in the summer-season. But, in the winter, the days are short, and the roads are sometimes impassable: Besides, as it is a well-known fact, that the present carters, at that period, are forced to wait frequently 24 hours at the pits, before they can obtain a loading, so their well-fed successors must necessarily be subjected to a similar delay; and “what (as our Coalmaster says) becomes of Edinburgh then,” when, from such impediments, *four* cart-loads per week might not possibly be delivered, instead of twenty? Would not its wretched inhabitants, with “frost-bitten toes, and undressed dinners,” anxiously seek back the former carters, faithful, though much despised as they are? And, during an inclement season, when the article was

raised to perhaps 30s. per cart-load, would not they "cast a wishful, and famished look" to the west, from whence they could be supplied at a sixth part of the expence?

IN the Third place, the truth is, that he who attentively inquires, as I have been induced to do, into this department, will find, that it would not be easy, and perhaps not practicable, to undertake it at a rate much more moderate than the present. Two-and-sixpence in former years, and 3s. 6d. in the present, are demands not extravagant, for carrying 12 cwt. six miles; especially in a situation, where the carters, on an average, are unable to go more than nine journeys per week in the summer, and four only in the winter. It is surely much cheaper than 3s. a ton, and almost 2s. a cart-load, the price now currently paid for bringing Newcastle coals from Leith to Edinburgh; and it pretty nearly corresponds to 8d. per ton per mile, which is a calculation usually made for goods, by persons the most conversant with the operations of land-carriage.

I PERFECTLY well know, that some Edinburgh carters, slovenly and starved as they are supposed to be, do go the length of carrying 16 cwt.; but 12 has generally been acknowledged to be a more profitable medium. On the experience, also, of private individuals, who have completely made the trial, it is pretty certain, that horses of a size and price capable of going two journeys a-day with 24 cwt., and on such ground as the country within six miles of Edinburgh, could not produce a return by any means to compensate for the expence of maintaining them*; and rail-roads (of all the most perfect species of land-carriage) are, on such ground, entirely out of the question.

WERE

* The expence of subsisting the great Glasgow waggon-horse is very considerable, and must, in a year such as the present, have sensibly reduced the profits of the owner. Such an animal generally requires $2\frac{1}{2}$ pecks of oats a-day, a stone of hay per night, or three stones in two nights; which quantity he will eat up between the time of his coming in at night, and five o'clock next morning. His price amounts to about L. 30; and he will last no longer, at this sort of work, than from three to five years. Even so high as L. 48 has lately been given for such a horse.

WERE there the shadow of temptation to adopt the above mentioned plan, the resource of a Coal-yard would obviously be necessary, for the sake of expeditiously depositing the loads. Now this, as our Observer, at least, knows, must be in "the most valuable grounds adjoining to the New Town," where the price is "10s. 6d. per square yard; and it will not appear an unreasonable calculation to say, that it will require one-and-a-half acres of ground for that purpose; the purchase money of which, at the above price, will be a trifle below L.5000*." It is true, L.5000, if divided among a set of men, like the coal-masters of Edinburgh, remarkable for their wealth, no less than their spirit of adventure, might not signify much; but he will at all events allow me, as to conveyance to the place of consumption, that it could not be highly rated at 1s. per cart-load; because we have the very *best* authority for believing, that, "every thing considered, at the average distance of Edinburgh and the suburbs, it may fairly be taken at that sum†." Thus, by the

* Observations p. 20. † Id. p. 19.

the new improvement, the expence of carriage for 12 cwt. being, as we have said, 1s. 2½d., if 1s. be added for transportation from the coal-yard, and 3d. more, as “a trifle for the toll,” (an *item* which the Observer seems nothing averse to overlook); the whole will amount to 2s. 5½d., that is, within ½d. per cart-load of the price usually charged by that miserable, starved, and slovenly race of men, whose unprofitable labours it is intended to supersede.

As soon, however, as the coalmasters in the happy district within six miles of the city, shall perform the conveyance, from the pit to the dwellings of the inhabitants, at 1s. 2½d. for 12 cwt., that is, *each* making a saving to his customers, or else a profit to himself, of L. 2600 a-year, *over and above* that of the present carter (which is necessary by the author’s hypothesis); in such a case, I agree to abandon my entire argument: Nay, I will cheerfully subscribe to his favourite position, that Inland Navigation for six, and even twelve miles, must *en-*
bance,

bance, instead of *reducing* the price of a commodity : And I will even admit, that it is better for Edinburgh to continue to pay, to its "native coalmasters," eight, fifteen, nay twenty shillings a cart-load, than most unpatriotically at *five*, to encourage its importation by "Drawcanfir Canals," and from a rival quarter of the kingdom.

SUCH, then, are the "dormant advantages," by which the coal-owners of Mid-Lothian are enabled, whenever they please, to enrich themselves, and utterly ruin the projected navigation. There are, besides, as the author informs us, "many others," that might be mentioned ; but he discreetly conceals them from the curious reader. According to the vulgar saying, it will sometimes happen, that "great wits jump ;" and, on that principle, he may be of opinion, with a celebrated historian, *Omne ignotum pro magnifico esse* (here employ the Schoolmaster) : But we will use the freedom, on this occasion, concerning his "dormant advantages," of disregarding the influence of so
general

general a propensity, and judge of their uncommon value, from the present specimen. In regard to the two improvements, which he has thought fit to exhibit to the view, we have fully shown, in examining this his SECOND Proposition, that the one, viz. the winding-machine, is inapplicable to the coaleries within six miles of the capital ; and that the attempting heavier cart-loads, instead of a saving of expence, would prove ruinous to the undertakers, and, in the end, leave the consumer no better off than before.

WHEN we first heard of the prodigious facility, with which the coalmasters of Edinburgh could “ ruin at once” the Lanerkshire Canal, I own I did expect, from a person like our Observer, something, at least, of a more feasible system, and more efficient expedients. But, from his want of success, those gentlemen will find no great ground to augur well of their cause. They will pretty clearly perceive, how little they have to expect from others less ingenious ; less acquainted with the principles,

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and

and less skilful in the practice, of an exclusive monopoly.

THUS, we have examined, with sufficient minuteness, what may be regarded as our author's two main propositions. It will now be proper to offer a few remarks on the miscellaneous matter that occurs, from page 34, to the close of the pamphlet. The principal doctrine he means to inculcate seems shortly to be this; that Inland Navigation, how important soever as a public object, can never be supported by the conveyance of Coals to either Edinburgh or Glasgow; and if, at all events, a Canal between the two cities must be cut, that the North line will answer just as well as another; or, in short, *any* line, that shall only avoid so formidable a region, as the rich and unworked districts of Lanerkshire. That is, in other words, *only keep up the price of Coals, both in the east and west*, (which the adoption of the North line would most effectually accomplish) and no fault whatsoever shall be found with your speculations.

DIFFERING

DIFFERING as I do from him, *toto cælo*, on so important a question, I must be permitted to say, that, although in the discussion he has indulged in his usual flippancy, he has not, by any means, displayed his usual address. This, therefore, if there be any difference, is the weakest part of his book. Sarcastic fallies, he will soon discover, with those who enquire after truth, will not pass for information; nor will the public shut its eyes to the advantages attendant on a great national design, because it happens to be decried in a few desultory remarks.

IN the foregoing part of his Observation, we have seen, that some attempts are made towards regularity of argument; and of these the impartial reader, I trust, is now enabled to appreciate the force. What follows is nothing more than a continued tiffue of petulance and misrepresentation, which, for the most part, I regard as neither demanding, nor deserving a reply. Not content with misrepresenting whatsoever by any method was capable of being

misrepresented in my arguments, he has, in one instance, gone the length of *falsifying*, and, in some sort, inventing a passage, for the purpose of quotation, and then very facetiously laughing at what he himself had so ingeniously quoted.

As these charges, and particularly the last, are somewhat serious, I consider it as incumbent on me to substantiate them by examples, before I proceed to the very little notice I mean to take of the rest of the pamphlet.

FIRST, as to misrepresentation.—In comparing the expence of the Northern, and Batten-Moss lines for the Canal, as the articles were taken from Mr Rennie's calculations, I thought I had stated them with a fairness which it would not be easy to deny, and a precision at least as difficult to misinterpret. I, indeed, opposed the larger size, in the one case, to the smaller size in the other, with the intent that each should be taken in its most perfect state: Nevertheless, I am willing, since it will gratify the Observer, that both Canals shall be supposed of the latter dimensions. Mr Rennie,
who

who has done every justice to the comparison, frankly confesses the greater expence of the North line, by no less than L. 50,000, including the branch to Gairon-gill; but, should that be omitted, by L. 10,519, and this *independent* of the price of the ground to be purchased*; to which, if we add (as I formerly did) the difference only of L. 20,000 for so material an article, there will remain a balance, even on the small scale of Canal, of L. 70,000 in the one case, and of L. 30,519 in the other, in favour of the track by Batten-Moss. Such is Mr Rennie's notion of the great difference of the expence of these two lines.

THE method by which the Observer garbles and perverts the above statement, displays his true genius. Instead of stating the full expence of the North line, as Mr Rennie has fairly done, when he puts it at L. 315,013:6:9, the Observer finds out, First, That the two branches to Gairon-gill are "perfectly useful;" although Mr Rennie had placed one
of

* See Mr Rennie's Second Report p. 14.

of the chief merits of the North line on communicating, by one or other of them, with the Lanerkshire coal-country*: And they are declared to be useless, for this notable, and most conclusive reason, that “*if* coal, in sufficient quantity, be found on the track of the North line itself†,” it then, without doubt, must be the case! Thus, he speedily rids himself of the troublesome load of L. 65,107 : 16 : 9, which inconveniently oppressed it. Secondly, As to the Batten-Mofs line, he confidently assures us, that the two branches in question are “*necessary* to its very existence;” whereas, the slightest inspection of Mr Rennie’s estimates and reasonings is sufficient to shew, that the eastmost only, by Chapel, can be considered in that point of view, and that, in fact, that branch would wholly supersede the necessity of adopting the other by Carfin. By this expedient, an extraordinary burden of L. 16,855 16s. 9d. is laid upon the Batten-Mofs line; or, in other words, he creates a difference of no less

* See Mr Rennie’s Second Report pp. 13. and 14.

† Observations pp. 52. 53.

less than L. 33,711 : 13 : 6 in favour of the rival track. Thirdly, In regard to the expence of the land to be purchased, amounting to a difference, on the very lowest computation, of L. 20,000, it is a trifling *item*, very convenient to be overlooked altogether ! Who is there, then, that will not admire our “unlettered” author’s ingenuity, in thus producing a balance, in favour of the North line, of L. 13,606 Sterling, as he does by his statement ?

THE fact is, on a fair comparison of the two tracks, even with the small-sized Canal, the result is far *less* favourable for that by Batten-Moss, than I myself had stated it to be : For I entirely concur in the hint given the Observer, that the Monkland Canal would, for every reason, be its most proper point of termination. Since, according to him, there are here the most extensive fields of coal, fit for the supply of the east “for many hundred years,” let the produce of these valuable mines, as well as that of the eastern Canal-districts, (which, I venture to think, are ten times more valuable and extensive) be poured into the market of Edinburgh :

And,

And, certainly, no scheme that could be devised would be so effectual, for rendering a *competition* most truly complete. *Fas est ab hoste doceri.* This is a use of his arguments, which, I am very willing to believe, he had no intention should be made.

To keep in view the level line, from near Carfin, by Blackyards and Garranton, is both proper and necessary; and whoever “suggested it to Mr Rennie,” (if, indeed, it did not naturally occur to that intelligent gentleman himself) instead of the animadversions of the Observer, is rather entitled to the thanks of the public. It constitutes an easy, and most practicable resource, should the proprietors of the Monkland Canal, misconceiving their true interest, throw any needless obstacles in the way of a design, of all others the best calculated to increase their tonnage, and add to the importance of their Navigation. At the same time, I am ready to acknowledge, that this line of direction has one incurable defect, for which no public objects are able to compensate: It would neither convey the coal
of

of *Fullarton* to the market, nor the *iron* of the *Glyde-furnaces* to the eastern or western sea !

THE statement of the expence, in the event of a junction with the *Monkland Canal*, would be pretty nearly as follows:

Cost of the *Batten-Moss* line, from *Leith*, to the 11th mile-stone on the *Monkland Canal*, according to Mr *Rennie's* estimates, nearly . . . L. 158,000

Level branch, by *Allanton* and *Chapel*, to *Gairon-gill*; which, by passing close to the *Newtown of Wishaw*, would not only render the other branch by *Carfin* unnecessary, but, at the same time, include the great coal-districts pointed out by Messrs *Busbys* to the eastward; . . . 9,346

What additional tonnage the *Monkland* proprietors might charge, or what sum of money they might take, for liberty to join their navigation,

Carry forward L. 167,346

T

Brought over L. 167,346
 it is impossible to ascertain, but say 15,000
 Because, it is evident, were much
 more to be demanded, the subscri-
 bers would find it better to execute
 the level reach by Blackyards and
 Garranton.

Total cost of the Batten-Moss line, L. 182,346

Expence of the Northern line, from Leith to
 Glasgow, according to the same estimates,
 supposing the small-sized Canal to be adopt-
 ed, L. 246,606

Level branch from Gilmarnock to Gai-
 ron-gill, (omitting entirely, in or-
 der to render the calculation as fa-
 vourable as possible for this line, the
 eastern branch by Cleland, Allant-
 on, and Chapel, and, consequently,
 losing all the most *untouched* coal-
 fields, which lie in that quarter, as
 above mentioned) 16,855

Total cost of the Northern line, L. 263,461

Total cost of the Northern line,	L. 263,461
Ditto of that by Batten-Moss,	182,346

Difference, therefore, in favour of	
the track by Batten-Moss,	L. 81,115

But, let it be observed, that this is entirely exclusive of the difference of the price of land to be purchased; which, as the whole country between Garfin and Glasgow would by the above plan be avoided, must, at least, be L. 27,000; thus making, in all, the difference in favour of the Batten-Moss line no less than L. 108,115.

THE Second example I shall adduce of our author's talent for misrepresentation, is the absurd attempt he has made to reduce the value of the Faskine Coal, at the pit's mouth, to 2s. 6d. per ton. Perceiving that such was the selling-price held forth in my pamphlet, he seems to have thought it necessary, for the credit of his own, that an instance should be brought forward of a cheapness no less extra-

T 2 ordinary;

ordinary ; and, I own, for the purpose of astonishing the reader, that the coal at Faskine is certainly just as fit a subject, as any other coal in the kingdom. In the First place, after sufficiently exulting over my inadvertency, in under-rating the tonnage and freight on the Monkland Canal, he proceeds, in some degree, to commit the same error himself*. In the

Second

* The freight, trackage, and tonnage of a ton of coals, along the Monkland navigation, are not accurately stated at 1s. 11⁸/₁₀d. But, had our inquisitive Observer "been at the trouble to take a ride to Glasgow, taking the Monkland Canal in his way, he would have been * told" exactly the amount of each. In my case, I thought, trivial errors were excusable ; and, relying on the reader's candour, I therefore humbly apologized for them, in my Prefatory Advertisement. They were, indeed, to be expected in a hasty pamphlet, drawn up for publication by a certain day, and which had cost little more than a fortnight's labour. But, to a person like the Observer, what shall be said, who boldly lays claim to the praise of accuracy ? who is too scrupulous to take any thing upon report, and trusts, it seems, wholly to the evidence of his own eyes and ears ?

* See his own pamphlet p 57.

Second place, because I had reckoned 1s. 4d. as the expence of conveying a ton of coals to the banks of the Canal, in a district of at least eight miles in length, he without scruple calculates, at a similar rate, the labour of conveying it about as many *yards* *! And, in the Third place, in order that so “remarkable “an *item*” as the profit to the proprietor might not “escape attention,” he very gravely deducts it from so accurate an estimate. No doubt, to the owners of the Monkland navigation (who perfectly well know that the working only, and bringing their coals to the surface, costs 3s. 4d. per ton), it must be somewhat amusing, to perceive the *entire* expence thus ingeniously

* At Faskine, the engine which draws up the coals from the bottom of the pit, is situated on the very bank of the Canal. Two men, therefore, have only to take the hutch from the rope, and, running it about six or eight yards upon a sort of platform made for the purpose, they discharge the contents directly into the Canal-boat. And this is the process, of which the expence is here so *moderately* stated at 1s. 4d. per ton!

ly reduced to 2s. 6d. : And, since such is the accuracy, with which they see the Observer calculating and reasoning on topics with which they are conversant, the reliance must be extraordinary indeed, that they will place upon him on others, in regard to which they might have consulted his pamphlet !

It would, however, be doing him injustice to omit, that (at p. 59.) he seems laudably ashamed of confounding what he calls the "neat expence at the pit mouth" at Faskine, with what I have stated to be the well-known selling-price, in the eastern Canal-districts ; and, accordingly, he attempts an awkward apology. But, it would have been to pay no very flattering compliment to the perspicacity of my readers, had I thought it needful to acquaint them, that, in the public *selling price* of any commodity, the profit of the proprietor is necessarily included.

THE Third instance of misrepresentation which I shall mention, is the remarks of the
author

author on what I asserted, at page 72, and do still assert, to be a "very curious and decisive fact," in order to demonstrate *the superior cheapness, at the pit,* of the eastern, when compared with the western coals of Lanerkshire. It was simply this; that a cart-load of the former, after being conveyed no less than 15 miles, by land, to the city of Glasgow, could be afforded at as low a rate, as a cart-load of the latter, conveyed about 12 miles on the Monkland navigation. Now, I presume, no man will doubt, that such a phenomenon could have proceeded from any other than one cause, viz. the very striking difference in the *original price* of the commodity: Because it is evident, that, allowing three miles to go off, in the former case, for the transportation from Port-Dundas to Glasgow, in the latter; the actual expence of the 12 miles of land carriage, on the experience of every existing navigation, must, at least, be three, and is often found to be four times more considerable, than that of a like distance by water. The com-
mentary

mentary of our Coalmaster on the above statement is *verbatim* as follows.

“ I CANNOT leave this part of the subject,
 “ without taking some notice of the “ curious
 “ and decisive fact,” with which it is con-
 “ cluded, page 72., and which, certainly, is the
 “ most curious argument that could well have
 “ been thought of, in a Treatise written for
 “ the express purpose of putting beyond all
 “ doubt the superiority of water, over land-
 “ carriage. The fact alluded to is, That the
 “ proprietor of Cleland-coalery can bring a
 “ cart of coals, 15 miles by land, cheaper than
 “ the proprietor of the Monkland can do it,
 “ 12 miles by water*.” This, without doubt,
 is a most rare piece of criticism ! under the
 disguise of which it would be difficult to dis-
 cover the smallest resemblance to my propo-
 sition.—Reader, if you can decide whether
 its *puerility* or its *petulance* is most remarkable,
 I own you will accomplish what far exceeds
 my ability.

CON.

* Observations p. 60.

CONCERNING such examples, most impartial men will now be ready to exclaim (and I sincerely unite with them in the feeling), *Obe! jam satis est!* as it were a waste of time, although a easy task, to produce passages enow, where the same propensity to perversion, and the same disregard to candour, are ineffectually displayed in our Observer's book. I shall content myself with referring the curious to pp. 16. 22. 34. 41. 48. 56. &c. &c.; of the perusal of which if they are not sick, I will venture to say, that they shall, at least, be satisfied concerning the point in question.

NEXT as to falsification. It had been asserted, at p. 64. of my book, that "in physics, as well as in morals, it used to be an axiom, that the *nearer* an object, other things being equal, the greater was of course the facility of attainment;" and I thence proceeded to infer, that, in comparing deep with shallow-lying coals, it was probable the latter, on such obvious ground, had some considerable advantages. This, we should have thought, was a

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proposition

proposition so clear, that the meaning and tendency were not easily to be perverted: But what perversion cannot do, a ready fancy is able to accomplish; and fabrication, we shall see, accompanied with assurance to a certain extent, is fairly worth a thousand arguments. "As the author (says our Observer) is fond of "axioms, and self-evident propositions, though "I cannot agree with him in what he calls an "old-fashioned one, "*that the merit of morality depends on the facility of its attainment,*" "I shall venture a corollary; That it is impossible any Canal of four feet deep can "ever contend with a land-carriage properly "conducted, and which does not exceed six "miles*,"

Now, I would only ask him, How a corollary about Canal-making comes to flow from what he calls "the merit of morality, and the facility of its attainment (for in my pamphlet there "are no such expressions to be found)?" Does he think that it can allow for deliberate falsification,

* Observations p. 35.

cation, that he envelopes it in nonsense, and confounds it with a dull, and unmeaning absurdity? The lowest bookmaker perfectly knows (although a Coalmaster, or a Merchant may not know) the terms on which he can quote from the writings of another, without any imputation of his candour, or any impeachment of his veracity. When the meaning only of a passage is understood to be given, but in *the words of the quoter*, there is a possibility of misconception, and a latitude therefore is allowable for error: But when the well-known mark of *inverted commas* is adopted, he thereby pledges himself to have copied the *ipsissima verba*, the identical expressions of the book, and fairly and honestly to have exhibited them to the reader. If it be really in ignorance that the Observer has transgressed so universal and equitable a law, he may be usefully reminded, how very foolish, as well as dangerous it is, with his pen in his hand, to venture, *ultra crepidam*, or, in plainer language, “beyond the precincts of the Counting-house.” If otherwise, I shall submit, to his friends, what degree

of turpitude must attach to the man, who transcribes, as a quotation, what has *no existence*, and advances nonsense of his own as another's positive assertions? These he very possibly may think harsh expressions. Should they sound unpleasing to his "unlettered" ear, I can only tell him, in the words of the poet, (and his friend the Schoolmaster may assist in the explanation)

————— *Videat qui fiet :*

Si mihi pergit, quæ volt dicere, ea, quæ non volt, audiet.

The above quotation, I can assure him, covers also an advice, which it will be well worth his while to get faithfully translated: And if he shall thankfully receive, and as prudently follow it, benefits far greater, than he perhaps may imagine, will redound to him *hereafter*, should he again rashly commit himself to the perils of authorship, whether in the present, or any future controversy.

HAVING now pretty fully examined the Observer's

server's performance, it is impossible to take leave of it without remarking, how very slender his fund of information seems to be, when compared with the peculiar self-sufficiency with which his strictures are made, and the consummate confidence with which his opinions are delivered. Of Canals in general he appears to know little, and still less concerning the history of the intended navigation. His coal-knowledge, also, is apparently of a very limited and local sort, scarcely extending beyond his native districts in the west, and to those of Edinburgh only through the scanty, but partial information of his employers. Yet this is the man, who pretends authoritatively to direct us in our inquiries in the east, and our excursions to the west ; unless we will be content with such a portion of it, as is contained in that most notable repository of *authentic* information, his own pamphlet!

Of so striking an union of conceit and ignorance, whosoever has examined the performance in question will not fail to observe an abundant

bundant display. In proof of his unacquaintance with inland navigation, we find it asserted, as an uncontrovertible proposition, that “no Canal of four feet deep* can ever contend with “a land-carriage properly conducted, and “which does not exceed six miles.” And, afterwards, the same doctrine is, with equal confidence, applied to twelve, where it is declared, that what renders the Monkland coals so dear in Glasgow now, is because they have the *misfortune* to be “transported by an inland navigation.” The extent of his intelligence respecting the Canal, which is the subject of his book, is nothing less remarkable. It is notorious, that no mineral survey of the North line has ever yet been made; and for this plain and obvious reason, that the extent of its principal minerals is well known already. And yet we are informed, (at page 50.) that, as the account

* The generality of Canals in Britain are cut to $4\frac{1}{2}$ feet deep: but this, I presume, will make no material difference on his statement, as, in a very short time, they fill up at least half a foot.

account of this track, "given by the Mineral Surveyors," has not yet been disproved, there must certainly exist unworked coal-fields of prodigious extent, from the neighbourhood of Houston, westward through Stirlingshire! Nor is his singular accuracy, in regard to the Lanerkshire Triangle itself, less worthy of observation. Although it is particularly described, in my pamphlet, by certain well-known places through which the line of demarkation is supposed to pass*, and which line very obviously includes the most valuable parts of the Monkland coal-country; yet, wherever *any* part of that country is mentioned by the Observer, it is mentioned as being situated *beyond* the limits of the Triangle †.

IN a person who reprehends, with such extraordinary triumph, the omissions or inadvertencies of other men, these are errors at least of
some

* In this description there is a trifling typographical error, which the slightest inspection of the map would correct: *South-east* was erroneously printed, instead of *North-east*.

† Observations pp. 55. 59. &c.

some magnitude, and deserving the notice of the candid reader. A few remarks, which I shall here make upon them, will, I trust, not be considered as either illiberal or hypercritical.

THE nature of land and water-carriage, whether for twelve or six miles, is a subject now pretty fully understood. The experience of England, for nearly 40 years, has thrown sufficient light on their comparative merits; and, indeed, it has rendered superfluous any formal refutation of a theory, so unfounded as that which our author above has attempted to establish. Since he is fond of "practical conviction," which, beyond question, supercedes all subtleties of argument, let him go to Manchester, and he will see, that fuel is reduced to one-half of its former rate, by means of the Canal from Worley-Mill to that town, a distance pretty nearly similar to the length of the Monkland navigation. And if he wishes to be convinced of the preference given to water-carriage, not only for *six* miles, but even for *three*, let him go to Sheffield, and enquire how

how the merchants there usually send great quantities of goods to Rotheram? The place last mentioned, he will find, is only six miles distant from Sheffield. Notwithstanding, it is certain, that they first dispatch the goods, by land-carriage, to Tinsley, which is but three miles, and then have them shipped on the Dunn Navigation, in order to transport them, the other three, by water. This they currently do, instead of sending the goods, as they might, the whole six miles at once, by land-carriage, to Rotheram. But, then, it must be acknowledged, that our author's pamphlet has probably not had time to reach Sheffield; and those ignorant merchants persist in their folly, from the want only of an opportunity of reading his remarks, and profiting by his instructions.

I AM inclined also to believe, that, without travelling quite so far south as Sheffield, there is an example at home, which has sufficiently brought the question to the test of experience. The town of Saltcoats is supplied with its coal, by a Canal which is cut for a still shorter space,

X

viz.

viz. the distance only of *a mile and a half*. Of its depth I am uncertain; but its breadth is from 14 to 15 feet: It is navigated by boats of 20, and sometimes of 30 tons burden; and it has not so much as a communication with the sea. Yet the supply of fuel to Saltcoats is nothing to the export trade, which, by means of this Canal, is most prosperously carried on. The coals, thus conveyed from the pits, are first unloaded at the coal-yard; they are next carted to the quays; and lastly, after being shipped on board the sea-vessels there, they proceed to their various destinations. Now, as it is more than probable, that the coal-masters of Saltcoats have long since both seen, and admired our Observer's performance, what, in the name of wonder, is to be said of their folly? Strange as it may appear, they still obstinately continue, like the proprietors of the Monklands, *to encrease the expence of their coal* by the use of "inland Navigation;" and, in spite of so frequently loading and unloading to boot, they adhere to the prejudices,

judices, without even the excuse, of the merchants of Sheffield.

IN regard to the *Mineral Survey* of the North line, as it exists purely in the author's own imagination, I shall not be solicitous either to weaken its testimony, or to deny its merit. I shall only observe, that it is a fact which must be well known to the Observer himself, that, all along this line in Stirlingshire, there is positively *no* important coal (that of Callander excepted) which does not already supply a lucrative land, or a still more lucrative sea-sale, or is wholly ingrossed by the Carron Company; and, above all, that the prices at the pit's mouth, in these districts, are, generally speaking, even *higher* than the Mid-Lothian rates. These decisive circumstances against the adoption of the Northern track I formerly set forth; and I now recur to them with augmented confidence, and without fear of contraversion.

As to our Coalmaster's pertinacity in stating my Triangle as a district wholly distinct from

the Monkland coal-country, I must consider it but as one among the many uncandid, and shallow arts, by which he labours to lessen the value of the former. Whoever will take the trouble to delineate it on Mr Rennie's map, according to the description which is given at pp. 51. and 52. of my pamphlet, will find, that almost all the Lanerkshire coal-fields of first-rate consideration are thereby included. Yet I will, without scruple, acknowledge the justice of the Observer's remark, where he says, that no extensive coal-country can ever be described with precision, either by a triangle, or by any mathematical figure whatsoever. The fanciful "ellipsis," that floated in the brain, and adorned the pages, of Messrs Grieve and Taylor, naturally gave birth to the idea of my more comprehensive Triangle; and as the notice of the public, however absurdly, had by means of an ellipsis been first attracted to the coal-country, I thought it as well, with all its imperfections, to continue the use of some similar emblem.

SINCE

SINCE our Coalmaster has thought good once more to bring forward, to the public view, the conduct of the first Mineral Surveyors, I may here be permitted to observe, that those gentlemen will, perhaps, not feel greatly indebted to him for the favour of his support in this controversy. A defence may very possibly be so weak or injudicious, as effectually to injure a cause; and ill-timed friendship may as certainly transcend the most determined hostility, and the bitterest libel. "When I am praised by a weak, or a bad man," said an ancient philosopher, "I am troubled to think what folly, or what evil I have committed."

THE sort of plea which the Observer has set up, in favour of Messrs Grieve and Taylor, whose survey I had ventured to reprehend, is, *primâ facie*, nugatory and irrelevant: And even, were that not the case, its weight would be much more than counterbalanced, by the ample concession he has made (at p. 46.), of the only point at issue between myself and those surveyors. But that is not the worst part of
this

this notable exculpation. “ It has been admitted, (he says) that they have fairly recorded what they saw, and that, so far as that went, their report is highly meritorious. Whether they would have added any thing to the merit of their information, by recording what they neither did, nor could see, or would have properly supplied that deficiency, by confiding in the reports and conjectures of the neighbouring proprietors and tenants ; and whether they would have better done their duty to the subscribers, by obtruding opinions upon them founded upon such an authority,—I shall leave to others more interested than I am to determine *.”

WERE I not now somewhat aware of this “ unlettered” gentleman’s mode of reasoning, I should be disposed to wonder how any thing so puerile, so shallow, and at the same time so unfounded, should ever be advanced, with such perfect complacency, and such unruffled assurance. It is true, with persons wholly *unacquainted with the subject*, or with the instructions

* Observations p. 43.

tions given to the Mineral Surveyors, it might possibly go down; and this, indeed, as we have seen, is clearly the object of the greatest part of his book. But if the reader will take the trouble to turn to page 47. of my pamphlet, where an accurate extract from these instructions is inserted, he will perceive, that, unluckily, Messrs Grieve and Taylor were in express terms enjoined, to record what they neither did, nor could "see." They were not merely to confine themselves to an account of existing coaleries, but were to consider the "reports of the "neighbouring proprietors and tenants" as among the *principal* objects, to which the subscribers had thought fit to direct their attention. With this view, they had it especially in charge, to "give previous notice, to the "proprietors, of the time they were to be on "their respective grounds; in order that such "proprietors might have an opportunity of giving particular information;" to report concerning "the appearances of the different minerals, and the information they should receive concerning their existence, and the possibility

“fibility of working them.” It was, therefore, by an *utter neglect* of this specific part of their instructions; it was by omitting to “obtrude such opinions” on their employers, that they so egregiously misled both the engineer and the public, as to the extent and situation of the coal-country: And thus, in fact, it happened, that they were very liberally paid for the discharge of a duty, which, we must believe, they as imperfectly fulfilled.

It is with extreme reluctance, that I am again forced to notice, in terms so unequivocal, the merits of Mr John Grieve, *ci-devant* Mineralogist, now Engineer of the Shannon*, and
of

* By a letter from this gentleman, with which I was some time since honoured, it appears, that he had exchanged his former profession of Mineralogist for that of *Civil Engineer*, and had actually been invited over to Ireland, in that capacity, in order to give his advice concerning the navigation of the Shannon. Although I hate, as much as any man, all national jealousy, or narrow prejudice, yet I cannot but think, that this event, and that of the UNION, happening

of his harmless, yet well-meaning coadjutor. Having already displayed, on their subject, no inconsiderable degree of forbearance and moderation, I was in hopes that it might have been suffered to rest in peace. But they have obtained an unquestionable proof of our author's friendship, a happiness which I am doubtful if they will know how to value as it deserves;

O fortunatos nimium, sua si bona norint !

As a Coal-viewer, notwithstanding, it would be unfair to deny, that Mr John Grieve possesses considerable talents. Of his ability as an Engineer I question not the extent ; but, being quite satisfied with Mr Rennie in that department, I shall leave it to be celebrated by the owners of the Shannon navigation.

Y

FROM

ing both within the same year, are really more good luck than our Irish neighbours seem entitled to expect. To what unrivalled excellence may not their Inland Navigation now be pushed, under such a master !

FROM the foregoing statements and reasonings it appears evident, that the entire question, between the advocates for the intended Canal, and their opponents, may now be reduced within a very narrow compass. Whether it may be accounted wise, or otherwise, to “carry fuel from one district to another, of perhaps the richest coal-country in Europe*,” will be found not to depend on the bare assertion of a solitary and self-sufficient scribbler; nor even on the opinion of any set of men, however honest in their intentions, or however respectable in their characters. As a question, it must be decided, not by opinion, but by *facts*; and these being once ascertained, (which, in the present case, they clearly are) it becomes a subject susceptible of proof, not a discussion open to fancy; and to the candid and impartial, it may be fully demonstrated.

IN former years 7s., and 8s. of late, are the prices, at which a cart-load of coals has been
furnished

* See Observations p. 40.

furnished in Edinburgh, from the Mid-Lothian mines; and 1s. 6d. is the rate, at which the same quantity is charged, in the east of Lanarkshire. Now, the short question is, First; Could the coal, in the latter districts, by means of water-carriage, be delivered in the capital at 4s. 3d., and 5s. per cart-load? And, Secondly, Were a Canal opened for that purpose, could either the cost at the Mid-Lothian pits, or the expence of transportation to Edinburgh, be so greatly reduced, as to counteract the scheme, and supply the market at a like reasonable, or at a lower price?

From what has been said, I trust, that to every candid enquirer it will be obvious, even in the most unfavourable times, when the Navigation was completely frozen up, that coals could be procured, from the yards or wharfs, at the rate of 5s. per cart-load; but, if delivered from the Canal-boats, (which, generally speaking, during nine-tenths of the year might be done) the price, as we have shewn, would not exceed 4s. 5d.; and, if a moderate al-

lowance be made for the loss they certainly would escape, by not lying on the coal-wharfs, it might even be afforded at the rate of 4s. 3d. per cart-load. So much for the first part of the question.

WITH respect to the Second part, the possibility of reducing the Edinburgh rates, I believe it may be resolved, in a manner no less satisfactory. This naturally is comprehended under two separate heads: 1st, The cost at the pit; and, 2dly, The expence of conveying the coal to Edinburgh.

1st, AT a coalery within six miles of the city, which is, I believe, as advantageously managed as any in Mid-Lothian, I find, that the entire expences usually amount to 4s. 11½d. per ton: And the average selling-price being 6s. 9d., there remains, of average profit to the proprietor, 1s. 8½d., or, pretty nearly, upon the great coal, 1s. 2d. per cart-load*. Now, leaving

* The "hill-price," at the coal-works here alluded to, is made up in the following manner,

leaving the author's very valuable, but "dormant advantages" quite out of the case, let us suppose, that, rather than lose the trade, the proprietors were willing to give up the one half of their profits; then it would follow, that the

Collier's price $1\frac{1}{2}$ d. per cwt. for great-coal, and 1d. for chows, that is, 14 cwt. of great, and 6 cwt. of small, to the ton; or the average rate, per ton, is L. 0 2 3

N. B. The jewel-coal, however, which we shall not take into the account, costs no less than $1\frac{1}{2}$ d. per cwt., or 2s. 11d. per ton.

Drawing from the bottom of the pit per ditto

(the pit not being above 45 fathoms deep) 0 0 $2\frac{1}{2}$

Other expences, calculated on an output of

30,000 cart-loads yearly, per ton 0 2 6

L. 0 4 11 $\frac{1}{2}$

Selling price of great-coal $4\frac{1}{2}$ d. per cwt., and of

chows 3d.; consequently, on 14 cwt. of the

former, and 6 cwt. of the latter, per ton, it

amounts to 0 6 9

Proprietor's profit per ton L. 0 1 8 $\frac{1}{2}$

the price of the great-coal, instead of 4s. 6d., would thus be reduced to 3s. 11d., at the mouth of the pit.

2dly, As to the carriage to Edinburgh. Since the publication of my pamphlet, I am informed, that some coalmasters, and other judicious persons, connected with the trade, have supposed, that, were the proprietors to take the business of transportation into their own hands, somewhat might actually be saved to the consumer on that article. Their idea is, that the coals could be carried to Edinburgh for 3s. per ton : But, then, they do not deny, that, in order to perform the requisite number of journeys, no time could be spared for selling in the city : Coal-yards, therefore, would become an indispensable part of the system. Having shewn above, that our Observer's improvements were nugatory or impracticable, let us see what would be the result of this idea of the coalmasters. The statement will stand as follows.

A cart-load of coals of 12 cwt. at
the reduced price at the pit, L. 0 3 11

Carriage of ditto to Edinburgh, at
3s. a ton is, per cart-load, 0 1 9⁶/₁₀

L. 0 5 8⁶/₁₀

The loss by breakage and shrink-
age, on the Canal-coals, was sta-
ted above at $\frac{1}{10}$ th part; and those
of Mid-Lothian would also, in
this way, sustain a fatigue, though
somewhat inferior. In order to
prevent all manner of cavil, say
that only $\frac{1}{11}$ th part of the above
sum shall be added, making
nearly 0 0 4⁵/₁₀

Carriage, from the coal-yard to the
habitations of the consumers, at
1s. per ton, 0 0 7²/₁₀*

The reduced price of the Edin-
burgh cart-load would then be L. 0 6 8³/₁₀
Thus,

* As the whole charge for carriage, in this view, from
the

Thus, it is evident, that, supposing this reduction of price, on the part of the coalmasters, to be practicable, (which I greatly doubt) other expences are unavoidably to be reckoned; and these would enhance the article to almost the price, in former years, of 7s. per cart-load. There would remain, therefore, a balance in favour of Lanerkshire, as delivered from the Canal-boats, of no less than 2s. 5 $\frac{1}{10}$ d. per cart-load; and, even during frost, of 1s. 8 $\frac{1}{10}$ d., when delivered from the coal-wharfs. But the fair and real balance, as calculated on the *present* Edinburgh rate of 8s., is nearly 3s. in the one case, and, accurately, 3s. 9d. in the other, in favour of the Navigation.

THUS

the pit to the consumer's habitation, amounts nearly to 2s. 5d. per cart-load, an additional proof is hereby afforded of the truth of the assertion we made above, at p. 132, that it would be difficult, and perhaps impossible, to perform the carriage from the pits at a more moderate rate, than is now charged in common years, viz. 2s. 6d., by the present carters.

Thus, it appears, that the whole of our argument may be compressed into the three following simple, and incontrovertible Propositions :

I. THAT there exists, in Lanerkshire, and in certain parts of Linlithgowshire, a vast body of coal; which, from its unparalleled extent, and proximity to the surface, is afforded at the pit, to the consumer, at *one-fourth part* of the price, which must necessarily be paid for the same article in Mid-Lothian.

II. THAT, were a Canal cut, from the metropolis, into this great coal-country, the city could be supplied with its fuel, during, at least, ten months in the year, at little more than *one-half*, and, during the two other months, at about *two-thirds*, of the present Edinburgh rates; an improvement, by means of which more than L. 36,000 a-year would be saved to the public*.

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III.

* See my former Publication pp. 17. 18.

III. THAT the mines, from which this supply is to be drawn, may, with justice, be considered as inexhaustible*: And such are the *natural advantages* they can boast, that, by being worked on an extensive scale, a certain prospect would be held forth, not only of procuring their produce, at the above mentioned price, for a vast length of time, but, probably, even at a rate still more moderate than at present.

IN my former publication it was asserted, as the main basis, and support of the Plan for carrying this great object into execution, not only that the stores of coal, in certain parts of Lanerkshire, were inexhaustible, but that a representation the most *defective*, (to give it no harsher

* I hope the reader has not forgotten the ample allowance given by the Observer on this subject, when he reprehends my first idea of the probable endurance of these mines for the supply of Edinburgh, which was 5749 years, as being "a calculation greatly within the mark." See Observations pp. 5. 6.

harsher a name) concerning the great coal-country, had certainly been held up by the Mineral Surveyors. That these assertions have turned out well-founded, on professional evidence the most unprejudiced and respectable, is certainly gratifying to my feelings; and, that they have been found, in every instance, not beyond, but *within the truth*, may justly be deemed a subject of honest exultation. I may now think, that it adds an authenticity to my statements, and a strength to my reasonings, which it will require something more, than the flimsy theories, or “dormant advantages” of a flippant and anonymous pamphleteer, either to shake or overthrow.

IN my Account it was stated, that by far the most valuable, because the most untouched, portion of the coal-country was by no means situated upon the banks of the Clyde, nor comprehended in the absurd “ellipsis” of Messrs Grieve and Taylor. On the contrary, I affirmed, that it stretched over an uninterrupted space of no less than eight miles in length, and near-

ly as many in breadth, from Hollytown, Carfin, and Gairon-gill eastward, a tract on which those gentlemen in their Report had been almost wholly silent; nor was it topographically true, as they had chosen to give out, that the great seams of coal uniformly dipped towards the above-mentioned river *.

AN attentive perusal of Mr Rennie's most luminous Report fully convinced me, that, on the decision of these points at issue between myself and the Mineral Surveyors, the choice of the track for the Navigation very greatly depended; because it was supposable, that a *Canal for coal* would be conducted into the cheapest, and most plentiful coal-country. As it was of the utmost moment, since such doubts had arisen, to establish the fact as to where that country actually lay, I petitioned the Subscribers, in the month of February last, to order a re-survey to be made, by honest and able Mineralogists, which would at once decide the question. It

* See my former Publication p. 48.—56. &c.

It had been proved, by Mr Rennie, that all commodities whatever, whether articles of produce, or objects of the thorough trade, could be far cheaper conveyed, from the three above mentioned points eastward, on the Canal by Batten-Mofs, than by any other line yet suggested for the Navigation ; and, by his explicit Letter to the Committee, of which I formerly made mention, the same doctrine was confirmed in the clearest terms, and to the fullest extent. If the grounds, he said, on which he went, were false ; and if the great body of unworked coal did *not* lie as it had been described to him by Messrs Grieve and Taylor, then the main drift of his arguments, in favour of the Northern track, of course fell to the ground. Should it, however, be candidly added, turn out as represented in *my* statement, “ he would have no hesitation in giving his *decided preference* to the Batten-Mofs line *.”

How

* See my former Publication p. 78.

How it *has* turned out, both Mr Rennie and the Subscribers, as well as the public at large, are now enabled to judge, from the Survey lately made by Messrs Busbys ; and of which the Report has since been printed, as supplementary to the deficiencies, and corrective of the mistakes, of the preceding surveyors. By that accurate, but concise publication most of the facts I had maintained are even *more* than corroborated ; and, instead of a neglected coal-tract of only about eight square miles, which I had ventured to bring into notice, it is fully ascertained to continue eastward, from Carfin, Hollytown, and Gairon-gill, that is, from the banks of the Clyde, no less than SEVENTEEN miles in length, and near EIGHT in breadth, to the neighbourhood of Midcalder, and, most probably indeed, within FOUR miles of Edinburgh *. The Subscribers, in this case, will now have little hesitation to join with Mr Rennie in the opinion, that, “ As the transportation of Coal, lime,

“ &c.

* See Messrs Busbys Report, pp. 9. 10.

“ &c. is the leading object of the Canal, and
 “ merchandise and passage-boats can form but
 “ a small part of its carriage ; it would surely
 “ be madness in the extreme (by adopting the
 “ North line) to sacrifice the greater to the
 “ less.” If such authority, then, be of any
 value ; if a Navigation be considered as any
 object, such as shall dispense, to so great a por-
 tion of the community, both a permanent ob-
 ject of traffic, and a necessary article of life,
 they will most probably resort, at last, to the
 idea of the original projectors of the design*,
 and give their unanimous suffrage for the line
 by Batten-Moss.

GREAT, I confess, and almost inconceivable
 are the follies, which public bodies of men may,
 and oftentimes do commit, when blinded by
 ignorance, or influenced by wilful misrepresen-
 tation, and the interest of party : But the com-
 mencement of the nineteenth century is, I
 trust, a period somewhat late in the history of
 com-

* See my former Publication p. 12.—16.

commercial adventure, for a COAL-CANAL deliberately to be cut into a district, where the article is scarcer, and where it actually sells at a *higher* rate, than in the quarter of the country *to which it is meant to be conveyed.*

OF great and useful works it has been said, that their importance might frequently be estimated, according to the prejudices which, in the beginning, were excited to decry, and the industry and the art employed to counteract them. In all countries this illiberal spirit is sufficiently discernible: But, perhaps, in England, more easily than in any other in Europe, its uniform operation is capable of being traced; where, extraordinary as it may seem, the greatest national designs are planned and brought to maturity by individual efforts; and where the property of private persons, but much more their prejudices, are usually sacrificed to the general good.

THE justice of the above remark the great Brindley was often heard to acknowledge, in
regard

regard to Inland Navigation, of which he is truly considered as the parent; and it is more than probable that Mr Rennie, as well as other Engineers in high employment, may be disposed to give evidence to the same effect. Where is now all the clamour of opposition, once raised to bias the public, or at least to operate on the Subscribers, against the Great Canal in Scotland, the Grand Trunk in England, and many other Navigations, now so popular and productive? The calm good sense of the English people soon discriminated between groundless objection, and permanent principles of utility: Even the apathy of our own country seemed exchanged for a sudden enthusiasm; and it blazed forth, for a season, with all the spirit and alacrity of our more active neighbours.

NOR were the envious and discontented of that day, any more than those of the present, without their literary champions. They, too, had their sarcastic pamphlets, as well acknowledged as anonymous; venting, as now, the ineffectual spleen,

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and the miserable wit of *Bankrupt Merchants, Neglected Engineers, and Interested or Disappointed Coalmasters.* But, from the fate of these, we may fairly venture to predict what awaits the labours of their successors. They soon ran their ephemeral career, and descended with speed, (here once more call in the aid of the Schoolmaster)

In vicum vendentem thus et odores.

As to the expediency of a Canal, to unite the two cities of Edinburgh and Glasgow, I believe, I may fairly claim whatever merit is due, (for on Newspaper publications little stress can be laid*) in first agitating the question. To the nation at large it is, beyond doubt, an undertaking of high utility. Whether we regard the various objects of Agriculture, of Population, or of Manufactures and Commerce to

* See certain Letters, addressed to the Lord Provost of Edinburgh, I think in the year 1793, under the signature of Lucius, and published in the Edinburgh Herald.

to which it would give birth, or to which, at least, it would give vigour, it must afford a source of pleasing contemplation to every man, who loves his country.

IN fact, it is not easy to determine, in which of these views its beneficial influence would prove most extensive: For, of Agriculture, Population, and Manufactures, it may be truly said, that, as in some sort they depend on, so they respectively accelerate, the advancement of one another.

By a Navigable Canal, upon the scale now proposed, the communication between distant and unconnected parts of the country would be opened, the price of land-carriage would be greatly reduced; and the manufacturer, by procuring his materials, his fuel, and the necessaries of life at a lower rate, would thereby be enabled to undersell his competitors. Where land was before of but little value, and thinly inhabited, population would quickly take place, and cultivation ensue, by the easy conveyance of ma-

nure. On the other hand, in situations where manufactures were already established, fresh vigour would be communicated to them; while new ones would rapidly, and successfully spring up. As consumers, by such an improvement, importation would more cheaply supply our wants; as producers, our exports would be affected with far greater facility: And the landholder, both in regard to the surface of the earth, and the mines within its bowels, would experience the useful effects of ready transportation, and new markets. Thus, the real wealth of the country, its productive labour, being immensely encreased, we should be enabled, by means of an augmented capital, to contend, with other nations, in the various branches of foreign commerce.

NOR is there any method, whereby that capital could be more successfully employed, than in the lucrative speculations, to which the rendering Leith a Coal-port would ere long give birth. It is beyond controversy, that the Lanerkshire coals could be delivered, on board

sea-

sea-vessels at Leith, at 7s. per ton*; and it is no less true, that 8s. 6d., at least, are paid to deliver a like quantity, from the coaleries on the river Tyne, at Newcastle; which sum, we have the highest authority to say, is, by the Duke of Richmond's and other duties, immediately raised to no less than 10s. per ton†.

In

* See my Account p. 16.

† When an enquiry into the Coal-trade was moved for, in the House of Commons, by Mr Manning, on the 11th March last, Sir Matthew White Ridley, a principal coal-owner, and member for Newcastle, stated to the House, that the price of coals, at the pit, was no more than 3½d. per bushel, that is, 10s. 6d. for the London, and 21s. for the Newcastle chaldron of 53 cwt.; but that, by the Duke of Richmond's and other duties, the price was immediately raised to 13s. for the former, and 26s. for the latter, before they left the Tyne, and to 24s. and 48s., on entering the port of London. Now, 26s. per Newcastle chaldron being within a minute fraction of 6d. per cwt., the entire amount of the ton will be found to be what is here stated in the text, and somewhat higher than we formerly supposed it. But I understand that the price of coal has risen, since the time of Mr Manning's motion in the House of Commons.

In Scotland, on the other hand, the duties upon coals carried coast-wise no longer exist, and those payable at Leith would not, by any means, be oppressive. It is, therefore, evident, that, with the difference in our favour of almost *one-third* of the price, we could undersell the English, not only in the great market of London, but in their own ports in the south, as well as those of Holland, of the Netherlands, and of Germany.

By the English themselves, as has been already hinted, and by the Londoners in particular, the superior fitness of our coal for chamber-fires is readily acknowledged; and there is no sort of doubt, were the merchants of Scotland, who would soon embark in the trade, to establish coal-yards on the Thames, as well as at Leith, a very short time would elapse, before a great part of London received its fuel from the Linlithgow, and Lanerkshire mines. Of the extent of such a speculation some idea may be formed, when we consider, that, during the year ending 1st March 1800,

no fewer than 866,167 London chaldrons, or, in other words, 1,169,326 $\frac{1}{4}$ tons of coals were imported into the vast, overgrown, and encreasing capital of the south* ; not to mention 60,000 chaldrons more, of the same measure, that found their way to different foreign markets.

IN fact, London itself, as well as every other sea-port on the east coast of England, is almost equally interested as Edinburgh, in the success of the purposed Navigation. Whatever may be the prejudices once entertained against the Scotch coal in the south, they are of such a nature,

* This appears from an authentic document, now in my possession, being a return from the Custom-House in London, specifying, half-yearly, all the coals which were brought into that port, from the 1st March 1790, to 1st March 1800; from whence it may be observed, that these imports are still on the encrease. The usual calculation, for the consumption of London, is 25,000 chaldrons per week; a quantity, which, how enormous soever it may seem, is yet not far from the truth.

ture, as very quickly to be done away. Were they much better founded, than by the most competent judges they are now acknowledged to be*, the prodigious saving that might be made, by adopting this coal as a fuel, and the great productive capital, which could, in consequence, be applied to other objects, would be far more than sufficient to preponderate in the scale. To persons unaccustomed to consider the subject, L. 36,000 a-year, which Edinburgh clearly would save, may, perhaps, seem, at first sight, an exaggerated statement; yet it is pretty certain, under judicious regulations, that a saving, even superior to this, might also be derived to

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* The author is gratified to learn, from an ingenious gentleman, to whom modern science is under considerable obligations, *Count Rumford*, that he means very soon to commence a series of experiments on the various species of coal, in order to ascertain the relative degree of heat, of which each is susceptible. The result, it is to be hoped, he will, with his usual ability, lay before the public; in which case, among other objects, it will certainly conduce to throw an useful light on this part of our speculation.

a greater metropolis. I know that the present duties, and imposts, and various burdens laid on coal, now imported into London, are excessive; so excessive, that we may hope the evil will very speedily, like other great evils, be able to effect its own cure. The coal-trade is a subject, which seems at length to have attracted the notice of the legislature: And there is ground to believe, from an administration attentive, perhaps, beyond former example, to every branch of finance, and every department of policy, that regulations, both equitable and salutary, will in due time be adopted.

CONCERNING the trade, which the Navigation might, with no less facility, open up in the west, viz. to the south of Scotland, to Ireland, and to the Isle of Man, a part of which the proprietors of the Monkland Canal have already shared with success, I must refer the reader to my former publication*.

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SHOULD the extraordinary brightness of such prospects, but those especially of internal melioration, seem unreal to any, let them look only to England, and from that country they will derive, at once, the finest incitement, and the fairest practical example. There they will see, within their own memory, entire tracts, the most desert and barren, that have, as if by enchantment, become the richest, and most cultivated. There, solely by means of Navigable Canals, (which bring, as it were, into contact the most distant objects) manufactures have spread, agriculture has flourished, and population has encreased, beyond all calculation or example. And these districts, in fact, still continue to rise to an influence and a wealth, to which we can venture to set no limits.

AWAY, then, with those muddy and miserable speculators, who would persuade us of our poverty in resources, and of the deplorable deficiency, as they unmeaningly call it, of our "spare wealth * !" Were these things really
so,

* Observations p. 43.

so, we could tell them, that it is not by innumerable concerns, or pernicious monopolies, by trade without stock, or landed-property purchased up on mere speculation, that that wealth shall be either laudably, or rapidly increased. In Scotland, at this moment, there is ample capital, to enable us to embark in most fair and honourable enterprizes; and, for such as chance to exceed our strength, there will be no want of aid, from both the spirit and liberality of our more opulent neighbours. England was once, what Scotland is now, only in the youth, nay in the very infancy, of internal improvement: But it was, indeed, on arts far other than those in question, that she relied for her aggrandizement, and by which she attained to her present maturity. Yet a scantiness of efficient capital, or, since our speculating gentlemen will have it, of "spare wealth," is surely not among the effects we have to lament, of our intimate connection with a more polished people.

It is a melancholy truth, as I formerly

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hinted,

hinted *, a truth which cannot too often be pressed upon the attention of my countrymen; that, how successful soever we may be, in acquiring the lessons of English vice, we equally fall short, in importing and naturalizing English virtue. It is not true, that I have either "hastily or severely" drawn a comparison between the industry of the two countries †. In all our intercourse with England, but of late years in particular, it certainly appears, as if *the desire of imitation*, by running utterly wild, had begotten in us a species of advancement at once the most alarming and corrupt, as well as the most premature and unnatural. It is thereby that we have confounded, or, at least, cut short, that necessary progression from rudeness to refinement, and from refinement at length to corruption, in the course of which men, in this world, are destined to rise to the full possession of their active energies; and it is, accordingly, by that means, that on the *man-*
ners

* See my former Publication, pp. 128. 129.

† See Observations p. 62.

ners and *character* of the nation a most pernicious influence has been produced. Our taste for elegance has thus far outstripped our love of industry ; and our actual wealth is already unable to keep pace with an emulous extravagance, and the growth of a nice, and fastidious luxury. Hence it happens, while we would willingly snatch the fair fruit of cultivation, and share it with our rivals, that we shrink, with an inconsistent indolence, and a still more inconsistent pride, from that active enterprize, that habitual diligence, of which *they* so well know the value, and by which alone they have been enabled to rear it to perfection.

To return to the subject. In stating the extent of internal improvement, we certainly should have classed the better supply of coal to Leith and Edinburgh, under that head. But, in fact, it is an object of such magnitude in itself, as well deserves to be separately enumerated. Independent of every consideration, whether of policy or manufactures, (on which it were superfluous any farther to insist) it is, surely,

surely, an object of no mean value, in a northern latitude, to relieve the wants, or, at least, to add to the enjoyments, of an hundred thousand individuals, by furnishing them with a cheap, and plentiful supply of fuel. To render the town of Leith a *Coal-port*, would certainly be the greatest thing, after the present improvements, that could possibly be done for that place; while, at the same time, a most valuable augmentation of the shore-dues would ensue, and increase the revenue of the capital.—

Amidst benefits so extensive and multifarious, should some profit be reaped by myself, and by other land-holders of Linlithgowshire and Lanerkshire, it is surely but the fair advantage that every man may claim, whose possessions are such, as usefully to minister to national prosperity, or to private comfort.

WHAT length of time will probably elapse, before a Navigation even like this may be executed, (for executed at some period it certainly will be) is beyond human foresight to decide. It is in the nature of things, that, where much ge-
neral

neral benefit is to be communicated, some partial evil must be endured. Great national undertakings, although they want not for friends, likewise never fail to attract enemies. Men usually feel, and think, and act, not from their reason, but from their interest, or their prejudices; and the same sort of energy is not to be expected from those, who are in hopes of obtaining something they have not, as from others, who are in hazard of losing what they have. Hence, the opposition which is made to new and unusual designs, is often able to overpower both the genius that has conceived, and the vigour that endeavours to support them.

THE natural friends, if I may so speak, of the Navigation by Batten-Moss, as well as its natural enemies, it is not difficult to distinguish, as they are formidably drawn up, and fiercely meditating the overthrow of each other:

—————*Stant obnixa omnia contra:*

*Haud aliter Trojanæ acies, aciesque Latinae
Insistunt.*——

On

On the side of the former may be ranged the Coal-owners of Lanerkshire; the Metropolis of the country, as a body corporate; the whole inhabitants of both Leith and Edinburgh; and to these we may, with justice, add every other individual, whose judgment is sway-
ed by no *personal* motives; but who has tru-
ly at heart the welfare and commerce of his country. On the other side, are seen the Coal-
proprietors of Mid-Lothian; a firm and formi-
dable phalanx, supported by their numerous
friends, their relations, connections, or retain-
ers. Next come the proprietors on the North
line; together with a few restless spirits, the
Monopolists, or Disappointed Coalmasters of
every district, who are ready to unite in the
outcry against *any* possible Canal, of which the
line does not pass in the immediate vicinity of
their own works*.

Of

* These "unlettered" gentlemen, we find, are variously
employed, as best suits their temper or ability. Some,
whose talents rise to nothing higher than noise and vocifera-
tion,

Of these two parties the general character may be shortly delineated. United in their views, and moderate in their numbers, firmness and unanimity distinguish the one, while unwieldiness and distraction, the effect of causes wholly opposite, too often paralyze the efforts of the other.—In such a state of things, what is to be expected? Fear is always more active than Hope; and the clamour against the new

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Canal

tion, are usually known by their coarse, but characteristic abuse of the Canal, both in public meetings, and in private society; where they diligently labour to mislead the judgment of the one, and confound the resolutions of the other. Others, again, are persons of fancy and genius, who have fortunately obtained, what has been the wish of the wisest men in all ages, the OTIUM CUM DIGNITATE; that is, (in order to save them the trouble of applying to the Schoolmaster) “the possession of an *honourable retirement*.” These enlist themselves in the service of the coal-owners of Mid-Lothian; and, in this their seclusion, they amuse their leisure with drawing up anonymous pamphlets; which, if they contain more pertness and flippancy, than knowledge or argument, are, on that account, more expressive of the true character of their authors.

Canal is sure, among a certain class, to be loud and violent. Even Inland Navigation comes, at length, to be held forth as an unproductive stock in a country, where the only existing example, (a concern, till of late years, certainly the worst managed of any in the universe) produces at the rate of *ten per cent.* to the original subscribers*.

How

* The vast sums of money squandered away in that great national undertaking, the Forth and Clyde Canal, are too well known, no less than the series of blunders committed by the managers, from the time they injudiciously rejected Mr Smeaton's noble plan for a cut to receive trading vessels of the greatest burden, till the completion of the Canal at its present size. Its radical defect was clearly predicted by that ingenious man, and is now experienced by the mercantile part of the public, viz. that, while its dimensions for Canal-boats was needlessly large, for sea-vessels it was equally diminutive and insignificant. Nor were these errors retrieved by any judicious, or economical scheme of management, as long as the business was conducted in Edinburgh. It is true that, of late years, by the exertions of individuals of both diligence and ability, the wisest remedies have been applied, and the most wholesome regulations have been adopted: But if, with such disadvantages, the dividends already
are

How long private and interested views may thus operate in distracting the public opinion, we cannot tell: But this we know, that *the counties of Ayr, Lanerk, and a part of that of Linlithgow, contain the chief repositories to which a great portion of Scotland must ere long look for its coal, at a moderate price; and that the hope of a communication to these districts by water, as well as the desire of gain which actuates the coal-masters of the east, may pretty certainly be calculated, in an inverse ratio to the patience of the consumer, and the apathy of the public.*

BEFORE I conclude, I must beg leave to declare, that I entertain, for the proprietors of coal in the county of Mid-Lothian, a very high and sincere respect. That they should oppose what I have written is fair and natural; but let them oppose it in a manner at once
open

are at 10 per cent., and still promise a greater advancement, let the reader judge to what a height they might, by this time, have risen, under circumstances more propitious.

open and manly, by coming forward in their real characters. Some of them, I know, can boast of both experience and skill on the subjects in question; and others are possessed of various knowledge, and liberal accomplishments. Such are the opponents with whom I should wish to contend, not with petulant, and hireling scribblers;

Non tali auxilio, nec defensoribus istis

Tempus eget.

SHOULD these gentlemen incline to put forth their strength, in a formidable attack on either my present or former arguments; and, as it is possible to happen, should I be fairly overpowered by their reasoning, or silenced by their wit, as an inhabitant of Edinburgh, I presume to hope, that I shall be entitled to the compassion, or at least to the thanks, of my fellow citizens.



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